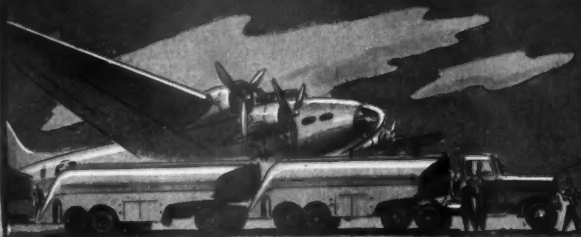


COMMERCIAL CAR JOURNAL

U.S. EAGLES OF THE AIR ARE SERVED BY REO GIANTS



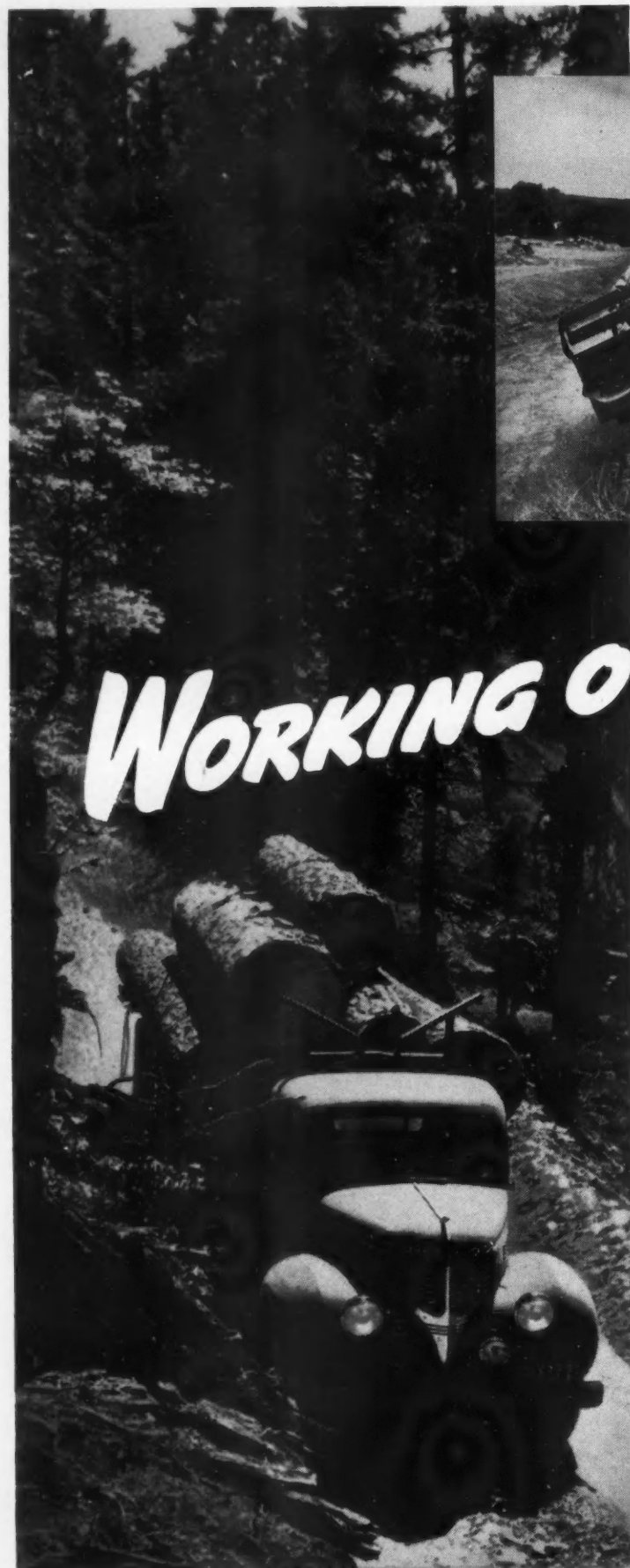
These big, powerful 10-wheel Reos, produced specially for the Army Air Corps, help keep our fighting Eagles in the air . . . keep 'em fighting. Equipped with tank trailers, they serve as airplane refueling units. Built for "tough going" by the manufacturer of AMERICA'S TOUGHEST TRUCKS, they've proved fully equal to the requirements of their appointed task — worthy bearers of the time-honored name REO.

Transportation
Library



*America's
Toughest Truck*

REO MOTORS, INC. LANSING, MICH.



WORKING OR FIGHTING

YOU CAN DEPEND ON

DODGE

***Job-Rated* TRUCKS**

We're fighting a "tough" war. Our fighting equipment must be "tough" . . . and there's none tougher than the *dependable* Dodge "working trucks" and "fighting trucks" that are everywhere "delivering the goods" to help win this war.

Working or fighting, on home fronts and war fronts, the **DEPENDABILITY** that is **DODGE** is helping mightily to speed the day of final victory.

If *your* hauling is essential, you'll want these more dependable, more economical, longer-lasting trucks . . . trucks with the *right* engine, the *right* clutch, transmission, and every other unit to *fit the job* . . . Dodge *Job-Rated* trucks.

See your Dodge dealer for exactly the right truck to fit *your* job. See him, too, for All-Fluid Drive Dodge cars, for Plymouth cars, used cars and trucks, and for dependable war-time service!

DODGE MEN BUILD WELL



KEEP YOUR PRESENT TRUCKS ON THE JOB WITH DEPENDABLE DODGE SERVICE!

For the duration, it's your patriotic duty to keep your present car or truck "on the job" . . . to get the maximum of dependable, economical transportation built into it. Let your Dodge dealer help

you. He has the "know how", the experienced mechanics, the factory engineered and inspected parts to maintain top operating efficiency. Depend on your Dodge dealer for *dependable* wartime service!



DODGE BROTHERS CORPORATION
SUBSIDIARY OF CHRYSLER CORPORATION

COMMERCIAL CAR JOURNAL

with which is combined Operation & Maintenance

Reg. U. S. Pat. Off.

Acceptance under the Act of June 5, 1934, authorized December 18, 1934.

Published monthly

Member C.C.A.

Vol. LXV

Philadelphia, June, 1943

No. 4

EDITORIAL DEPARTMENT

JULIAN CHASE, Directing Editor

GEORGE T. HOOK, Editor

A. W. GREENE

Assistant Editor

EDWARD L. WARNER, JR.

Detroit News Editor

MARCUS AINSWORTH

Statistician

L. W. MOFFETT & J. D. BROWNE, Washington New Editors

JOHN B. YERGER

Technical Editor

JOSEPH GESCHELIN

Detroit Technical Editor

H. KOHLBRENNER

Art Editor

EDITORIAL CONTENTS

Copyright 1943 by Chilton Company (Inc.)

FEATURE ARTICLES

Training Men with Films	38
Drivers Can Shoot Trouble by Eye, Ear, Nose, Feel	40
Wartime Battery Maintenance	42
Scientific Driver Training	48
Cold Welding Technique Explained	51
Servicing a Scattered Fleet	52
Tank Trucks Save Tank Car Business	54
How Hertz Conserves Trucking Equipment	56
Aluminum and Post-War Vehicles	58
Progress of British Retail Pools	58
Restrictions Limit U. S.-Canada Short-Cut	60
Jeffers Assures Tires for Trucks	61
S.A.E. Reports	62

DEPARTMENTS

Washington Runaround	37
Free Publications	44
New Products	46
Shop & Salvage Hints	46
ODT News	64
OPA News	66
WPB News	66
CCJ Newscast	74
CCJ Quiz	76
J. I. O. Offices	190
Advertisers' Index	196

Automotive Division

Jos. S. HILDRETH, President and Manager

JULIAN CHASE, Vice-Pres.

G. C. BUZBY, Vice-Pres.

OFFICES

Philadelphia—Chestnut & 56th Sts., Phone Sherwood 1424. New York—100 E. 42nd Street, Phone Murray Hill 5-8600. Chicago—Room 916, London Guarantee & Accident Bldg., Phone Franklin 4243. Detroit—1015 Stephenson Bldg., Phone Madison 2090. Cleveland—609 Guardian Bldg., Phone Cherry 4188. San Francisco—605 Market St., Room 708, Phone Douglas 0967. Los Angeles—6000 Miramonte Blvd., Phone Lafayette 5525. Washington, D. C.—Room 1061 National Press Bldg., Phone District 6877.

SUBSCRIPTION RATES: United States and United States Possessions and all Latin-American countries—\$2.00 per year. Canada and Foreign—\$4.00 per year. Single copies—25 cents. April issue, \$1.00.

Owned and Published by
CHILTON COMPANY
(Incorporated)

Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

Officers and Directors

C. A. MUSSELMAN, President

Vice-Presidents

JOS. S. HILDRETH
EVERIT B. TERHUNE
WILLIAM A. BARBER
JULIAN CHASE
P. M. FAHRENDORF

J. H. VAN DEVENTER
Treasurer JOHN BLAIR MOFFETT, Secretary
THOMAS L. KANE
HARRY V. DUFFY

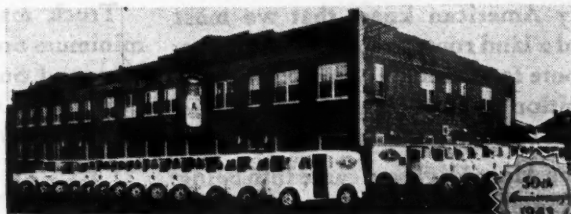
GEORGE H. GRIFFITHS
C. S. BAUR
G. C. BUZBY
CHARLES J. HEALE



Thousands of miles of "Good Impressions" with MEYERCORD DECALS

This smartly "Decal-ed" dairy truck delivers more than good milk. It delivers good impressions. Colorful impressions. Clear impressions that last. Seven separate decals present an uncrowded sales story and a lasting identification service.

Utilize the free space on *your* truck with Meyercord full-color Decals. Reproduce trademarks, packages, slogans, numerals . . . without the use of critical materials. Meyercord Truck Decals are weather-tested, durable and permit fast "over-night" application at a fraction of hand-painting cost. Free designing service. Address Department 1186.



The Garst fleet is one of thousands enjoying the economy and satisfaction of Meyercord Decal service. Photos courtesy of Garst Bros. Dairy, Inc., Roanoke, Va.

ELASTICALS
SAVE
RUBBER

WEATHER • TIME AND TORTURE-TESTED
MEYERCORD DECALS

THE MEYERCORD CO., 5323 W. Lake St., Chicago, Ill.



WHO HOLDS ALASKA!

**"Who holds Alaska, holds the World"
... said the late General Billy Mitchell**

★ ★ ★

Alaska was ours, so we held Alaska. It was very simple through the years... but the tides of greed were rising in the Orient. Far out beyond the northern wilderness we held the tempting jewel... in reach of others who would rule the world.

Then in a blinding flash we saw that *to have* is not the same as *to hold*. And every American knew that we must build a land route to the far northwest. A route for armies, and arms, and ammunition... for defense... for offense! Not at our own sweet time, but NOW!

The Alcan Highway came into being in a moment of supreme danger... in six months of heroic achievement. Victory Boulevard, to Alaska, "the

most strategic land on earth."

Alcan is a busy truck highway now, a road which trucks helped build, for truck traffic. Night and day, in the turmoil of construction, husky International Trucks bore a gigantic burden, hauling capacity loads of rock and gravel as the great highway advanced. They helped keep vital supplies moving through wilderness. They hauled fuel, repair parts, water, a vast tonnage of mechanical equipment, and food for an army of men.

Truck maintenance is at absolute minimum on a job like the Alcan Highway, and only the toughest of trucks can take it. Once again International Trucks proved their stamina, as they are proving it, day after day, on the roads and battlefronts of the world.

INTERNATIONAL HARVESTER COMPANY
180 North Michigan Avenue • Chicago, Illinois



MAJOR WAR PRODUCTS BUILT BY INTERNATIONAL HARVESTER

- Torpedoes
- Half-track Military Vehicles
- Artillery Prime Movers
- Automatic Airplane Cannon
- Oerlikon Gun Mounts
- Military Trucks
- Military Tractors
- Steel Products for Military Use
- Shells • Gun Carriages
- High Speed 155 m.m.
- Gun Carriages
- Tank Transmissions
- Adapter Boosters
- Airplane Engine Cowling Assemblies
- Trackers • Gun Loaders
- Marine Corps
- Invasion Ice Chests
- Blood Bank Refrigerators

INVEST IN AMERICA ★ ★ ★ BUY MORE WAR BONDS

★ INTERNATIONAL TRUCKS ★

WPB Shellacking in Offing

The Truman Committee investigating the effect of parts and vehicle production restrictions on motor transport efficiency gathered evidence during the merry month of May and the betting in bureaucratic circles was that the Automotive Division of the War Production Board would be "crucified." One committee investigator has practically lived in the various offices of the ODT collecting choice morsels of condemnation. There's no love lost between the men in ODT and the men in Automotive Division of WPB largely because of the latter's attitude. WPB's Automotive Division insisted on keeping its finger in commercial vehicle allocation although ODT was ably staffed to handle the work alone. WPB insisted upon retaining the right to reject vehicle applications approved by the ODT and the fact that very few applications were disapproved is held to indicate that the paperwork and personnel involved in this duplication of effort was unnecessary and extravagant.

More than that, WPB's duplication of effort is held to have been inefficient. Under the commercial vehicle rationing order the dealer who delivered a vehicle on an approved application was to send a postcard to WPB to provide WPB with a record of withdrawals from the pool of rationed vehicles. It is common gossip in the capital's automotive circles that WPB's record of withdrawals is incomplete and its estimate of vehicles remaining in the rationing pool wholly untrustworthy. Not all dealers mailed postcards to WPB and there was no follow-up to get the postcards in. It is said that the WPB estimate of heavy trucks in the pool even now varies from 90 to 1000.



WASHINGTON RUNAROUND

**WPB Shellacking in Offing . . . 7500 New Trucks
5000 Trailers . . . L-51 Order Draws Protest . . .
ODT Delays Decisions . . . Operator Attitude Is
Changing . . . Issues Seem Unimportant . . . Only
20% of Fleets Report . . . Need for Revised 17
Doubted . . . Revocation Procedure Snags . . . Leasing
Amendment Ready . . . 30,000-Bbl. Black Market . . .
Truck Ceiling Gripes . . . Used-Car Ceiling**

by **GEORGE T. HOOK**, Editor

A more recent encroachment on a strictly ODT preserve has also been resented. This was the setting up of a section of the WPB Automotive Division which, despite denials, would have duplicated ODT's vehicle and parts conservation program. The section invited operators to submit

their joint action plans for conserving vehicles and commenced the collection of material dealing with parts salvage and preventive maintenance.

ODT circles are confident that the Truman committee will find that ODT was on top of all requirements
(TURN TO PAGE 68, PLEASE)

TRAINING MEN WITH FILMS

A list of films, available free of charge from manufacturers, that will help fleet operators with manpower training problems. The films clearly explain and illustrate sound operation and maintenance practices and cover tires, parts and vehicles



THE silver screen may yet prove to be the silver lining in the fleet operators' dark clouds of manpower shortage. Interesting, educational motion pictures and slidefilms are available on subjects dealing thoroughly and authoritatively with many phases of truck maintenance and truck operation.

The films have been produced by leading truck, trailer, tire and automotive parts manufacturers. While some films deal with the details of product manufacture, most are definitely technical, being designed to meet the very situation that now faces fleet operators—training unskilled men to replace the skilled workers lost to military service or war industries.

The educational value and effectiveness of such films have been proved over many years. The films explain the fundamentals, operation and maintenance of the various units far better than most mechanics are able to explain them to their helpers or apprentices. Moreover, the data have been carefully prepared by factory engineers and service managers who are in a position to know the easiest, quickest and most effective service methods and operation of their particular equipment. In this respect even expert mechanics can find many helpful suggestions. The effectiveness of these illustrated lectures depends not only upon the fact that everybody enjoys seeing movies and slides, but also on the fact that the trainees are relaxed and in a receptive frame of mind.

It remains for the fleet operator to take advantage of this splendid material and fit it into a regular program of employee meetings. Many fleet operators already have monthly or more frequent meetings at which safety and maintenance subjects are discussed either by the management or outside experts. A number of fleets also have seen some of these films and are enthusiastically making arrangements to schedule more. Fleet operators not having driver or shop meetings at present should have no trouble in preparing interesting programs with the educational films as the feature attraction. A wide assortment of films is available enabling the fleet operator to schedule a light, general subject with a "heavy" technical picture and thus achieve a balanced program. In addition, the respective manufacturers will be glad to cooperate in many ways to making each meeting interesting and successful.

A recent survey by Commercial Car Journal disclosed that a number of excellent educational releases—sound and silent motion pictures, slidefilms and slides—are available without charge for showings at fleet meetings. A summary of the data appears on the opposite page. The information, grouped according to the particular units or operation of a truck featured by each presentation, will enable the fleet operator to choose the type of illustrated lecture most urgently needed or a series of lectures covering all subjects to

give the personnel a well-rounded program extending over several months.

Each listing states exactly what the respective manufacturer will provide. It is indicated, for example, that in some cases the manufacturers are setup to supply the film, screen, projector and an operator, who also may be a technician capable of answering questions arising out of the showing; in other cases, the film only can be furnished and the fleet operator is to make all other arrangements. The title of the film is listed in capital letters. This is followed by an explanation of the theme, or subject matter, in parenthesis. The technical details, that is, the size of the film and whether it is the sound or silent type; the running time; equipment and operator provided, if any, next follow in that order.

In most cases no charges are made for the use of the film, equipment or the operator's time. It is expected, however, in cases where films are forwarded direct to the fleet operator that he will exercise all reasonable care in its handling and do everything possible to assure its safe return. Also, consideration should be given when planning showings that the manufacturer may have a number of requests on hand for the same film. Therefore, at least two weeks' notice for the loan should be provided; however, it will be noted that many manufacturers require one month's notice to arrange their schedules.

Piston Rings and Related Parts
SECTION FOUR
Procedure for Eliminating
Excessive Oil Consumption

Prepared for
THE QUARTERMASTER CORPS, U. S. ARMY
By the Service Engineers of The Goodyear Corp.

Method

KEEP 'EM
HOLDING



Films and Where to Get Them

The following is a compilation of technical films on which complete data was furnished by the manufacturers. The listings are arranged according to subject covered.

Tire Maintenance and Conservation

FACTS BEHIND TRUCK TIRE LIFE (Truck tire conservation)—16 mm. motion; silent; 30 min.; projector; screen; operator; no charges; address local Firestone dealer or store, or E. H. Holmen, Mgr., Tire Conservation Division, Firestone Tire & Rubber Co., Akron, Ohio.

HOW TO DO IT (Operation and maintenance of truck tires.)—slidefilm; sound; projector; no charges; address General Tire distributor in any city or K. A. Dalsky, Mgr., Truck Tire Sales, General Tire & Rubber Co., Akron, Ohio.

KEEP 'EM ROLLING (Deals with the importance of rubber in transportation today, care of tires, etc.)—16 and 35 mm. motion; sound; 25 min.; film only; no charges; address nearest B. F. Goodrich dealer, Goodrich Silvertown store, or Motion Picture Dept., The B. F. Goodrich Co., Akron, Ohio.

CARE AND MAINTENANCE OF PNEUMATIC TIRES (U. S. Army training program film. Produced in three parts—Preventive Maintenance, Removing and

Replacing Truck Wheels, and Mounting and Dismounting Tires with Semi-Drop Center and Flat Base Rims.)—16 mm. motion; sound; projector; screen; operator; three- to four-week notice; no charges; address local Goodrich dealer or K. E. Hopkins, Tire Sales Promotion Manager, The B. F. Goodrich Co., Akron, Ohio.

TRUCK TIRE CONSERVATION (Maintenance and conservation of truck tires.)—35 mm. slidefilm; sound; 30 min.; projector; screen; operator; no charges; address Goodyear Tire and Rubber Company, Inc., Sales Promotion Division, Akron, Ohio.

Brake Maintenance

AIR BRAKES AND AIR CONTROL DEVICES (Full color explanation of maintenance and operation from the conservation angle. Designed for personnel training programs.)—35 mm. slidefilm; silent; color; elementary phase 40 min.; full advanced detail approximately 2 hr.; film and operator; one- to two-week notice; no charges; address D. W. Scott, Bendix-Westinghouse, Elyria, Ohio.

KEEP 'EM HOLDING (Covers entire field of hydraulic brake operation and maintenance.)—16 mm. motion; sound; 1 hr., 10 min.; film only; operator if schedule permits; one-month notice; no charges; address R. W. Case, Jr., Thermoid Co., Trenton, N. J.

Wheel Alignment

PRINCIPLES OF WHEEL ALIGNMENT (Exposition of wheel alignment and steering geometry fundamentals.)—35 mm. slidefilm; silent; 20 min.; film only; one-week notice; no charges; address Bear Manufacturing Co., Rock Island, Ill.

Fuel Pumps

SERVICING FUEL PUMPS (available about July 1.)—16 mm. slidefilm; silent; film only; no charges; address Department of Public Relations, A. C. Spark Plug Co., Division of General Motors, Flint, Mich.

Piston Ring Maintenance

THOSE ENORMOUS LITTLE SCRATCHES (Shows how invisible furrows in oil rings can increase oil consumption.)—35 mm. slidefilm; 15 min.; film and record only; no charges; address The Perfect Circle Co., Hagerstown, Ind.

THAT HIGH POWER TOP INCH (Explains the purpose of piston rings and how they work.)—35 mm. slidefilm; one hour; film and record only; no charges; address as above.

RING 'EM RIGHT FOR PROFIT (Deals with the correct installation of piston rings.)—35 mm. slidefilm; 15 min.; film and record only; no charges; address The Perfect Circle Co., Hagerstown, Ind.

PISTON RINGS AND RELATED PARTS (Mechanical overhaul procedure film.)—35 mm. slidefilm; silent; one hour; film and reader's script only; two-week notice; address C. H. LeFevre, Sealed Power Corp., Muskegon, Mich.

Bearing Maintenance

BEARINGS CARRY THE LOAD AND CONTROL ENGINE PERFORMANCE (Covers bearing service of all types of automotive engines.)—35 mm. slidefilm; 30 min.; address nearest Federal-Mogul branch or Federal-Mogul Service, 4809 John R Street, Detroit, Mich.

KEEP 'EM ROLLING (Manufacture, care and maintenance of tapered roller bearings for automotive equipment.)—16 mm. motion; sound; 45 min.; film only; no charges; two-week notice; address S. S. Huffman, Mgr., News Bureau, Timken Roller Bearing Co., Canton, Ohio.

Electrical System

SPARKS (Service and care of spark plugs.)—16 mm. slidefilm; silent; 15 min.; film only; no charges; address Department of Public Relations, A. C. Spark Plug Co., Division of General Motors, Flint, Mich.

IGNITION AND SPARK PLUGS (Covers fundamental function of the ignition system of an engine.)—16 mm. motion; sound; 18 min.; projector; screen; operator; no charges; address Champion Spark Plug Co., Toledo, Ohio.

STORY OF A SPARK PLUG (Manufacturing and servicing of spark plugs, including cleaning, testing and installing.)—16 mm.; sound; 45 min.; projector; screen; operator; no charges; address Champion Spark Plug Co., Toledo, Ohio.

THE STORY OF EDISON BATTERIES (Battery manufacture.)—16 mm. motion; sound; 30 min.; film only; 10-day notice; no charges; address J. L. Stanford, Mgr. of Sales Promotion and Advertising, Thomas A. Edison, Inc., Kearny, N. J.

WILLARD AND YOU (Step-by-step trip through plant illustrating manufacture of storage batteries from receipt of raw materials to the finished product.)—35 mm. motion; sound-on-film; 30 min.; film only; two-week notice; no charges; address W. W. Priemeyer, Willard Storage Battery Co., 246 East 131st St., Cleveland, Ohio.

REGULATORS (Covers the operation, checks and adjustment of Delco-Remy passenger car and heavy-duty regulators.)—35 mm. slidefilm; sound; 30 min.; film and record only; no charges; one-month notice; address William H. Crouse, Service Department, Delco-Remy Division, General Motors Corp., Anderson, Ind.

GOOD IGNITION (Covers operation, checks, adjustments and maintenance of Delco-Remy ignition equipment.)—35 mm. slidefilm; sound; 30 min.; film and record only; no charges; one-month notice; address as above.

ELECTRICAL TUNE-UP—35 mm. slidefilm; silent; 15 min.; film only with reader's script; no charges; one-month notice; address as above.

Rear Axle Maintenance

A DECLARATION OF WAR (Covers inefficient truck operation and maintenance with particular emphasis on axle maintenance.)—35 mm. slidefilm; sound; 30 min.; projector; screen; operator; no charges; address O. E. Johnson, Mgr., Motor Transport Cooperative Service Dept., Timken Detroit Axle Co., Detroit, Mich.

TEAMWORK (Portrays the responsibilities of management, drivers and mechanics in keeping trucks rolling. Places particular emphasis on axle maintenance.)—35 mm. slidefilm; sound; Kodachrome; over one hr.; projector; screen; operator; no charges; address as above.

General Maintenance

M-SERIES TRUCKS (General information on engines, transmissions, axles, clutches, etc.)—16 mm. slidefilm; silent; one hr., 30 min.; film and reader's script only; no charges; address C. V. Shively, General Service Dept., The Studebaker Corp., South Bend, Ind.

Welding

HOW TO WELD ALUMINUM (Passes on the "know how" essentials in torch welding, arc welding, brazing and resistance welding.)—16 and 35 mm. motion; sound; 36 min.; film only; two-week notice; no charges; borrower expected to pay transportation costs both ways and insure shipment; address Motion Picture Dept., Aluminum Co. of America, Pittsburgh, Pa.

Driver Training

THE FWD INSTRUCTOR (How to drive a truck properly.)—16 mm. motion; silent; 40 min.; projector; screen; operator; no charges; one-week notice; address A. J. Danley, Asst. Adv. Mgr., The Four Wheel Drive Auto Co., Clintonville, Wis.

THE SKILL BEHIND THE MAN (Shows and tells the driver the importance of safe driving practices.)—35 mm. slidefilm; sound; 30 min.; projector; screen; operator; no charges; request as far in advance as possible; address nearest Fruehauf branch, Distributor, or W. D. Wise, War-Service Dept., Fruehauf Trailer Co. Inc., Detroit, Mich.






THE MAN BEHIND THE WHEEL (Covers the fundamentals of driving a tractor-trailer unit, particularly as it differs from driving a truck.)—35 mm. slidefilm; sound; 30 min.; projector; screen; operator; no charges; request as far in advance as possible; address nearest Fruehauf branch, Distributor, or W. D. Wise, War-Service Dept., Fruehauf Trailer Co. Inc., Detroit, Mich.

General

SINGING WHEELS (The importance of motor truck transportation dramatized.)—16 mm. motion; sound; 22 min.; film only; no charges; one-week notice; address Arthur C. Butler, Mgr., Truck Div., Automobile Manufacturers Association, Transportation Bldg., Washington, D. C.

UNFINISHED RAINBOWS (Quizzed by his class, "What is there left to invent? What chances are there for those who are just starting out?" a chemistry professor answers by telling the story of aluminum. Alan Ladd in the cast.)—16 and 35 mm. motion; sound; 36 min.; film only; two-week notice; no charges; borrower expected to pay transportation costs both ways and insure shipment; address Motion Picture Dept., Aluminum Co. of America, Pittsburgh, Pa.

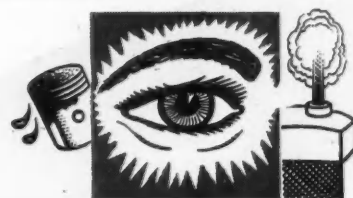
DRIVERS CAN SHOOT TROUBLE

BY   EYE ★
  EAR ★
  NOSE ★
  FEEL ★

Knowledge and recognition of operation
danger signs will lead to avoidance of
major breakdowns, reduction of mechanics'
time and promote vehicle conservation

by **ROBERT CASS**
Chief Engineer, The White Motor Co.

EDITOR'S NOTE: The data contained in these pages were appended to a paper entitled "Wartime Replacement Parts" which the author presented at the National Transportation and Maintenance Meeting of the Society of Automotive Engineers in New York City, May 6, 1943. A digest of the basic paper, dealing with wartime parts performance, appears on page 62 of this issue.



DETECTABLE BY EYE

Sudden drop in oil pressure.

- *Insufficient oil.
- Engine overheated, causing thinning of oil.

Excessive oil consumption.

- Piston rings, broken, worn or stuck.
- Piston ring slots clogged with carbon.
- Cylinder bore out of round or excessive taper.
- Cylinder bore scored or badly worn.
- Improper grade and viscosity of oil.
- Oil level too high.
- Oil leaks at gaskets and seals.

Low oil pressure.

- Improper grade and viscosity of oil.
- Oil pump screen clogged.
- Excessive bearing clearance.
- Oil pump worn excessively.

No oil pressure

- *Not enough oil in engine.
- *Oil too heavy to go through screen in pump.

No oil pressure

- *Ice formed on screen in oil pump.

Black smoke coming from exhaust pipe.

- Excess carbon in engine, or too rich a mixture.

Blue smoke coming from exhaust pipe.

- Too much oil in crankcase, or excessive piston ring wear.

Smoke coming from under hood.

- *May be short in wiring, or loose fan belt.

Water or anti-freeze lost too quickly.

- Overheating.

Lighting equipment fails.

- Blown-out fuse.
- Bulb burned out.
- Short in wiring circuit.

Truck sags at one or more springs.

- Broken springs.

Scuffed tires.

- Wrong pitch or toe-in.
- Bent or twisted axle.

Spotty tire wear.

- Under-inflated tires.
- Dragging brake drums.

- Eccentric or unbalanced tires or wheels

* Vehicle should not be driven until examined and repaired by competent automotive mechanic. Operation of vehicle when trouble of this nature is indicated may lead to serious damage and longer tie-up of truck.



DETECTABLE BY EAR

Sharp knock when picking up speed.

Distributor not set properly for grade of fuel used.

Light knock when engine is running idle—knock coming regularly at end of each connecting rod stroke.

*Loose wrist pin.

Dull, regular knock in engine in time with crankshaft speed.

*Loose connecting rod bearing.

Dull, heavy pound in time with crankshaft speed.

*Worn or burned out main bearing.

Clutch disc not running true.

Light clicking or tapping noise.

Valve tappets out of adjustment.

Intermittent squeal or squeak.

Loose fan or accessory belt.

Continuous squeal or squeak.

*Lack of lubrication in generator, water pump, distributor, or other parts.

Loud exhaust noise.

Muffler or exhaust pipe broken.

Engine back-firing.

Spark plug porcelain cracked or broken.

Sticky valve.

Crossed spark plug wires.

Lean mixture.

Popping, splitting and spark knock.

Valves adjusted too close.

Exhaust valve head too thin causing hot sections.

Excessive carbon in engine.

Weak valve springs.

Hot spot in cylinder head usually caused by clogged water passages.

Valves not seated properly.

Valve timing early.

Poor fuel.

Running engine misses.

Cracked, short-circuited, or fouled spark plugs.

Distributor points out of adjustment.

Rotor contact corroded.

Battery terminals loose or corroded.

High tension cable grounded, or loose connection.

Low tension cable grounded, or loose connection.

Loose and short circuited wiring connections to coil and distributor.

Steaming and hissing.

Insufficient water in radiator.

Engine overheats.

Late timing.

Water pump not working.

Lack of oil.

Air cleaner clogged.

Radiator covered too much.

Over-supply of anti-freeze.

Plugged or restricted cooling system.

Loose or missing fan belt.

Engine refuses to stop when switch is turned off.

Excessive carbon in engine.

Engine will speed up but truck will not.

Clutch slipping.

Engine stalls when running idle.

Cold engine. The reaction will be the same as with a lean mixture.

Both cause spitting through the carburetor, back-firing through the muffler, and engine stalling.

Retarded spark.

Carburetor throttle lever set too low.

Spark plugs gaps too large.

Steady hum.

Lack of oil in transmission or axles.

Oil in units too heavy or too light.

Differential gears worn or not adjusted properly.

Buzzing noise in cab.

Leak in air lines.

Clicking in speedometer.

Dry cable.

Clicking in drive line when engaging clutch.

Insufficient lubrication.

Distinct revolutionary click when turning corner.

Loose wheel.

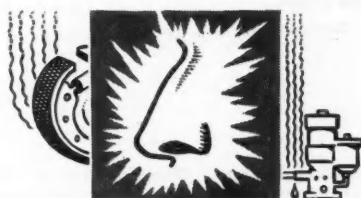
Dull thud timed with running speed of truck.

Stone wedged between dual rear tires.

Broken gear tooth in axle.

Body noise. (Rattles, squeaks, sharp snapping, creaks and sawing sounds.)

Varied causes—loose doors, floorboard, cab support bolts, windshield ventilators, running boards, etc.



DETECTABLE BY NOSE

Odor of gasoline.

*Leaky lines or carburetor.

Odor of burning rubber.

*Short circuit in wiring.

Odor of burning rubber.

*Wiring fallen on manifold.

Odor of burning oil.

Clutch slipping.

Odor of burning oil.

Overheated engine.

Odor of burning oil.

*Dry bearings (as fan, etc.)

Odor like burning rags.

Hand brake applied.

Brake shoes improperly adjusted.



DETECTABLE BY FEEL

Excessive vibration in engine.

Loose engine mounting support.

Several cylinders not firing properly.

Lack of power.

Loss of compression, valves not seating.

Late spark causes sluggishness and overheating.

Plugged muffler.

Incorrect valve timing.

Hand brake applied.

Air leak at intake manifold.

Slipping clutch.

Dragging brakes.

Low or poor compression.

Fuel pump not functioning properly.

Air leaks at intake manifold.

Cylinders scored or worn excessively.

Weak or broken valve springs.

Valves sticking in guides.

Hard shifting in cold weather.

Oil too heavy in transmission.

Jerky motion in slow speeds or when stopping.

Engine needs tuning, or drive line needs lubrication.

Truck swerves when stopping.

Oil or water on brake linings.

Hard steering.

Tires under-inflated.

Excessive friction in tie rod or drag link joints.

Abnormal friction in steering gear assembly.

Low speed shimmy.

Tires under-inflated.

Too much or too little caster.

Loose steering knuckle bearings.

Loose front wheel bearings.

Loose or worn steering mechanism.

Eccentric wheels.

Low speed shimmy.

Front spring hangers loose on frame.

Unequal front wheel camber.

Weak or sagged front springs.

Drag link out of line.

Front brake drums out of round (shimmy only on brake application).

High speed shimmy.

(Items applicable to low speed shimmy).

Front wheels wobble.

Front wheels out of balance.

Ruptured or weak spot in tire, resulting in distortion due to centrifugal force.

Dragging front wheel brakes.

Steering wander.

Tires under-inflated.

Zero or reverse caster.

Excessive error in toe-in.

Axles shifted in springs.

(TURN TO PAGE 146, PLEASE)



WARTIME BATTERY MAINTENANCE

A comprehensive battery testing and checking procedure that embodies all requirements for long, trouble-free service and safe storage for spares

by JOHN B. YERGER
Technical Editor, Commercial Car Journal

IN THE interest of longer battery life, conservation of vital materials and more dependable overall electrical performance, fleet operators should have as a part of their preventive maintenance program a definite battery testing and checking procedure.

Such a procedure is outlined here, and by adopting it as a regular part of their maintenance program, operators will be assured of dependable, long-lasting and economical performance from their battery equipment.

Inspect Regularly

1. Batteries should be checked every two weeks in climates where the temperature reaches 80 deg. Fahr. or over, and at least once a month where lower temperatures are encountered.

2. A record should be kept of the date and amount of water added. (See Adding Water, Item 11.) In the record should be included the gravity readings at each inspection, the regulator setting and the adjustments made.

Charging Rate

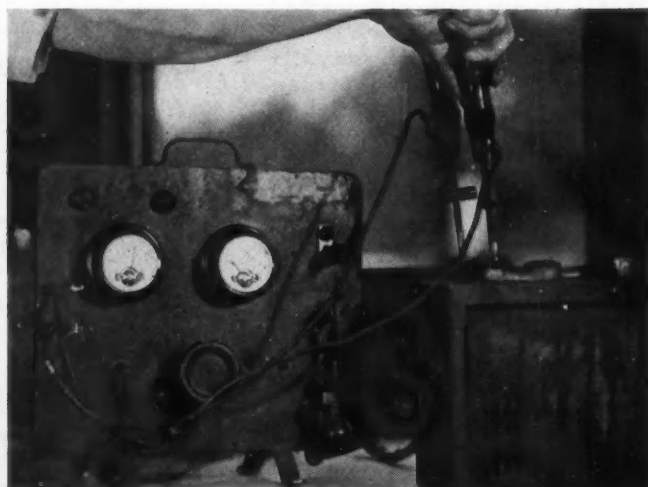
1. Make a monthly check of charging rate.

2. Make sure that charging rate compensates for the current-demand to supply required amperage for

Keep connections tight and free from corrosion, otherwise voltage will be lowered and electrical accessories will operate improperly



Check voltage of each cell with low reading voltmeter. The voltage should not drop below 1.5 volts per cell at 60 deg. Fahr. or above



operation of starter, lights and all electrical accessories.

3. Charging rate should never be set higher than the maximum specified by the manufacturer of the generator.

4. If due to accessory loads or wiring defects, the ammeter shows a constant discharge, the battery will run down and give trouble even though it is more than amply large for normal requirements.

5. A high charging rate to a charged battery causes the battery to gas and overheat. With these conditions the battery requires frequent additions of water, and battery life is shortened. To avoid this, the charge rate to the battery must be reduced as the battery approaches full charge. A properly adjusted voltage regulator will limit the charging as the battery becomes charged.

6. Check the voltage regulator and keep it in adjustment to obtain good battery life.

7. The current regulator, which protects the generator from overload by limiting its output to a safe value, should always be checked along with the voltage regulator.

Voltage Regulators

1. Voltage regulators must operate within extremely narrow limits, a slight difference in voltage setting will produce a large difference in

the amount of charging current going into the battery. If set too high, the generator will continue charging at the high rate and can cause serious damage to the battery.

2. With a fully charged battery the ammeter will usually register a high rate of charge for a few minutes after starting, if the vehicle has been standing a while. This is normal, however, and the rate of charge should taper off within 15 min. of driving. If this tapering off to a low rate does not occur, improper adjustment of the regulator is to be suspected, and a check of the regulator should be made.

3. A fully charged battery and a low charging rate indicates normal voltage regulator operation.

4. With a low battery and a low or no charging rate, check the circuit for loose connections, corroded battery terminals, loose or corroded ground strap, and frayed or damaged wires. If the entire charging circuit is in good condition, then either the regulator or generator is at fault.

5. It is important to make periodic checks, and corrections if necessary, of voltage regulators. Failure to do so may result in short battery life.

Battery Carrier

1. Battery carrier or compartment should be kept clean and dry. This
(TURN TO PAGE 126, PLEASE)



Test specific gravity of electrolyte frequently. Recharge battery if reading is less than 1.225

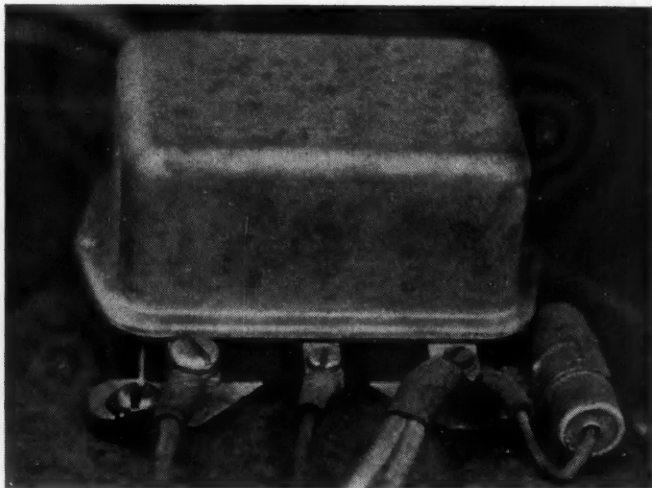


Avoid overfilling of battery, as spillage can cause badly corroded condition shown above

Check cables and repair or renew if they are frayed or oil soaked. Many times they can be reconditioned and prolong replacement time



Check the voltage regulator and keep it in adjustment to obtain long battery life. Current regulator also should be checked periodically



free PUBLICATIONS

VALUABLE AIDS FOR FLEETMEN

A selected list of the latest literature — books, pamphlets and catalogs — intended to help fleet operators solve maintenance and operating problems. They are more valuable today than ever before. All are free. To get your copies simply fill in the numbers on the postcard and mail. No stamp is needed.

KEEP 'EM ROLLING

USE THIS
POSTCARD
NO STAMP NEEDED

L103. ODT-SAE on Cold Welding

Fleet operators who want the facts about the principles employed in repairing cylinder blocks, cylinder heads, etc., by the so-called cold welding process now can secure an ODT-SAE report outlining the step-by-step procedure.

The report was prepared by the Maintenance Methods Coordinating Committee, Subcommittee on Cold Welding, of the Society of Automotive Engineers at the request of the Office of Defense Transportation. It not only outlines the procedure for cold welding repairs but reports on the limitations of the process and gives the experiences of operators who have used this method of repair.

The report should help to dispel the secrecy surrounding cold welding. It also should encourage greater application of this method of repair, where feasible, in the interest of conserving the nation's supply of vital materials. Write L103 on the postcard for your free copy.

L104. Piston Service Manual

Fleet maintenance men interested in adding to their knowledge of how to prolong piston life and efficiency in automotive vehicles, should find helpful data in a new manual now available to them.

This 16-page manual has been prepared to impart an elementary understanding of the functions of the engine piston and the principles of its operation and performance. The manual provides useful text material for both apprentice and the more experienced mechanics. Fleet operators and their mechanics should have a copy of this instructive manual. Write L104 on the postcard for your free copy.

L105. Electric Tool Manual

A new manual detailing how to get maximum service from portable electric tools has just been published. This 20-

page manual contains complete and brief instructions on the proper operation and care of all types of portable electric tools. Special attention is given to the maintenance of the motor, cable, switch and brushes. Right and wrong operating methods are clearly stated and illustrated. A copy of this manual should be in every fleet shop. Write L105 on the postcard for your free copy.

L106. Transportation Handbook

Transportation's wartime and peacetime problems and their solutions are the theme of a most interesting handbook just coming off press and intended for fleet operators who are endeavoring to keep abreast of the times.

This handbook, entitled "Logistics—the Science of Moving Armies and Supplies," is a must for all concerned with fleet management and operation because it deals with the problem of moving goods in the most direct way. Among examples cited is the time, material and money savings performance of Pennsylvania Turnpike which is saving 140 miles for more than a thousand trucks and trailers a day on hauls between the Midwest and the Eastern seaboard, to say nothing of tires, gasoline, oil and man-hour savings.

Only a limited number of these handbooks are being printed. Write L106 on the postcard for your free copy.

L107. Fire Fighting Data

Two charts that show complete data about the use of all types of fire extinguishers, are now available. The charts clearly and concisely tabulate the various types of fire extinguishers and their suitability or otherwise as applying to class "A," "B" and "C" fires, in accordance with Underwriter's Laboratories classification. For convenience, a class "D" is added to cover the fire hazards of automo-

biles, commercial trucks, etc., and a class "DT" to cover the fire risks pertaining to tank-trucks and trailer-tractors.

The charts also give complete data in condensed form as to extinguisher characteristics, methods of operation, capacity, range of stream, etc.

Every operator should have a set prominently displayed in his shop. Write L108 on the postcard for your free copies.

L108. Tool Conservation Manual

New tools for civilian use are becoming scarce, many types are already unobtainable. One way to relieve this shortage is to prolong the life of tools now in use. A new 48-page booklet on the care and repair of bolt and wire cutters and similar tools is being offered to fleet operators.

This well illustrated manual, not only covers bolt and wire cutters but also contains chapters on the correct use and care of cold chisels, files, ball pein hammers, hack-saw blades, drills, taps and high speed bits. By following the suggestions given in this booklet, operators will be able to prolong the life of many tools. Write L107 on the postcard for your free copy.

L109. Air Conservation Posters

Here is a series of five posters that should prove of interest to fleet operators who use air compressors and compressed air-operated tools. The purpose of these posters is to help wage war on leaky hose couplings, valves, and other pipe fittings, and by so doing, to help speed production and avoid wasted power.

The posters are done in two colors and make generous use of splash illustrations. The text is printed in large, bold faced letters and is held to a minimum, the (TURN TO PAGE 182, PLEASE)

COMMERCIAL CAR JOURNAL

Chestnut & 56th Sts., Philadelphia, Pa.

June, 1943

Please send me:—

These FREE Publications—

(Order by Number Shown on
Opposite Page)

_____	_____	_____	_____
_____	_____	_____	_____

Please send me:—

Information on New Products—

(Order by Number Shown on
Following Pages)

_____	_____	_____	_____
_____	_____	_____	_____

I would also like information on the following products advertised in this issue:

.....

Your Company Name

Your Company Address **City** **State**

Your Name **Your Position**

We are: Fleet Operator ☐; Number of Trucks in Fleet ; Truck Dealer ☐
Truck Repair Shop ☐; Other Classification

FIRST CLASS
PERMIT No. 18
Sec. 510, P. L. & R.
Philadelphia, Pa

BUSINESS REPLY CARD

NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

POSTAGE WILL BE PAID BY

COMMERCIAL CAR JOURNAL

Chestnut and 56th Sts.

Philadelphia, Pa.



NEW PRODUCTS

KEEP 'EM ROLLING
**USE THIS
POSTCARD**
NO STAMP NEEDED

FOR FLEET OPERATORS

The latest in shop equipment, supplies, replacement parts and accessories developed by manufacturers for fleet operators. For more details of any product described, fill in the number on the postcard and mail. No stamp needed. Also use the postcard for additional information on any product advertised in this issue.

P112. New Electric Drills

Using a new plastic material called "Drillite," Black & Decker Mfg. Co., Towson, Md., has designed practical housings for the $\frac{1}{4}$ in. standard drill and the new $\frac{3}{8}$ in. standard drill.



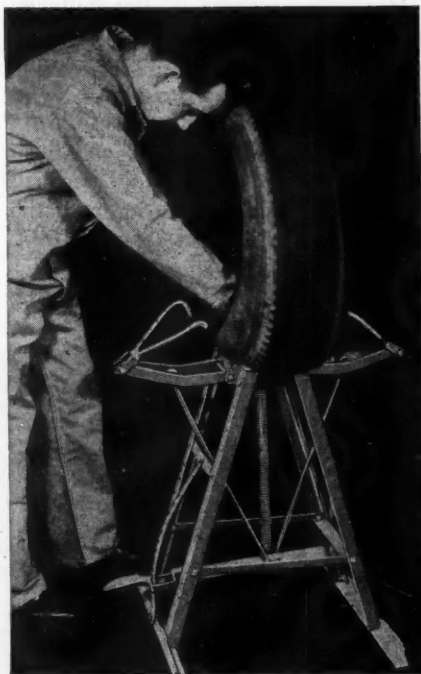
The plastic is made with a shredded cotton duck base, which gives it a high impact resistance, and enables it to withstand considerable abuse and wear. The plastic is also heat resistant, and a perfect insulator against dielectric shock. Steel inserts are cast into the plastic housings to carry all ball bearings, and threaded steel inserts in the field housing for housing assembly screws. Steel air vents in the commutator end housing insure ample motor ventilation.

There is a marked reduction in the weight of the complete unit, as compared with former models using metal housings. Both units are offered with either end handle or side handle control, equipped with the famous pistol grip and trigger switch, and with universal motors, operating on either AC or DC current.

Use free postcard for more details

P113. Tire Spreader

A new foot-power tire spreader has just been announced by the Weaver Mfg. Co., Springfield, Ill. The new spreader is specially designed for OPA inspections of passenger and light truck tires, permitting quick inspections with a minimum of effort. Speedier operation is claimed for the spreader since one thrust of the foot pedal completes the spreading operation in a natural spreading motion, leaving the hands free. Tire is held at a convenient working height.



Under a recent government ruling the spreader may be bought without priority.

Use free postcard for more details

P114. Fire Extinguisher Case

To reveal instantly any attempt to tamper with fire extinguishers, American-LaFrance-Foamite Corp., Elmira, N. Y., has introduced a new, inexpensive extinguisher case, known as the Tamplless Case.

Constructed of non-critical, tough cardboard stock, it safely houses the extinguisher from the reach of unauthorized



persons and yet allows instant removal for legitimate use. One quick pull on a sealed string breaks through a gummed paper sealing strip, as shown at right in the accompanying illustration, and permits the Tamplless Case to unfold. The extinguisher can be lifted immediately from its bracket.

The case can be reused. Simply reserve extinguisher, replace, fold case, as shown at left in the above illustration, and reseal.

Use free postcard for more details

P115. Portable Battery Charger

A new portable gasoline driven generator, for rapid battery charging is announced by Hunter-Hartman Corp., St. Louis, Mo. This new unit is said to eliminate many

(TURN TO PAGE 182, PLEASE)



1. Distributor Repair

by Charles Platt
J. T. Trommer, Inc., Brooklyn, N. Y.

When distributor shafts become worn to such a degree that they interfere with the proper functioning of the ignition points, we repair them in the following manner: First remove the breaker plate; next, disconnect the springs of the centrifugal advance weights and remove the cam. Then install a piece of shim brass to fit the inside of the cam, to remove the play caused by the cam wearing the top of the distributor shaft. Generally a .004-in. piece of shim will remove all play in a badly worn shaft.

2. Salvaging Armature Shafts

by F. W. Green, Oshkosh, Wis.

Here is a method that we have used successfully in the repair of broken starter armature shafts. First drill a $\frac{3}{8}$ -in. diameter hole, 1 in. in depth into the broken end of the shaft at the armature end. Next, secure a length of oversize shaft, and turn one end down to $\frac{3}{8}$ in. diameter and 1 in. long. This should be a press fit in the hole that was drilled in the armature end of the broken shaft. Then

the two shafts are welded together where they meet, and the new piece of shaft is then turned down to size and cut off at the proper length.

3. Throw-Out Shaft Repair

by F. J. Small
Checker Express Co., Milwaukee, Wis.

On some of our Ford trucks we have had trouble with clutch throw-out shafts breaking at the flattened end. Being unable at the time to purchase any new shafts, we repaired the old ones.

The method of repair is as follows: First saw off the flattened end flush with the end of the shaft. Then drill a $\frac{5}{16}$ -in. hole, $\frac{1}{2}$ in. in from the end of shaft. Next cut a slot $\frac{5}{16}$ in. wide up to the hole.

The new flattened end piece can be

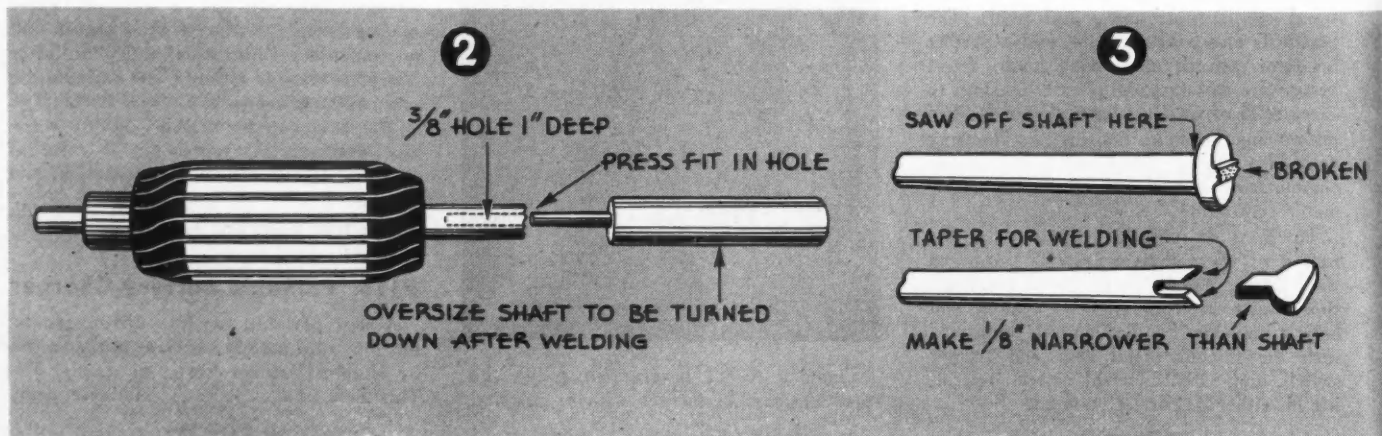
made out of a piece of $\frac{5}{16}$ -in. flat iron, and should be $\frac{1}{8}$ -in. to $\frac{3}{16}$ -in. narrower than the shaft on each side to allow for welding. This piece is then fitted into the slot and welded in place. To make a better weld job, taper the corners on the shaft.

4. Fuel Pump Repair

by W. M. Heil
Gulf Refining Co., Louisville, Ky.

We have experienced some trouble with the fuel pumps on Ford trucks where the pump would not pull sufficient gas to operate the truck, due to lack of pump stroke. We overcame this difficulty by adding an adjuster to the pump push rod.

The adjusters were made from an old discarded push rod. First we peened around the upper, case-





Commercial Car Journal will pay \$5.00 for acceptable shop hints and \$5.00 for unusual parts salvage tips.

Send in as many ideas as you have to the editor. Don't underestimate your ideas. Let the editor be the judge. A photograph or a rough sketch and simple explanation in your own words are enough. CCJ will polish them up for publication. Use this opportunity to earn extra money to buy

★ Victory bonds and help win the war. ★ ★



hardened extension joint until this came off, then we reinserted this piece into the rod again to act as an inner brace while cutting small sections off the rod.

These sections or adjusters are carried in the tool box of our trucks to be used when an emergency adjustment of the push rod is needed. When the fuel pump fails, one of these adjusters can be added, and the pump will then operate satisfactorily.

5. Removing Filter Bags

**by R. C. Cunningham
Langworthy Refrigerator Service
Williamson, N. Y.**

We have devised a quick method of removing filter bags on some of our trucks, such as the Brockway

models 175 and 220. The filters on these models are located directly under the exhaust manifold, and, when it is necessary to remove a dirty bag, it has to be pulled out at an angle, for there is not enough room to pull it out straight. Because of this awkward removal, the wire threaded around the bag always breaks. Then it is necessary to dig the bag out, which takes considerable time.

We have overcome this trouble by using a piece of No. 14 iron wire threading it in the same place as the original. The wire is sharpened on both ends, which allows it to push through the bag easily. After pushing it through, the ends are then twisted three or four times so it won't pull apart.

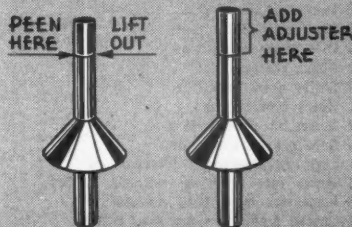
6. Starter Repairs

**by Stanley McCullough
Otto Suburban Dairy, Pittsburgh, Pa.**

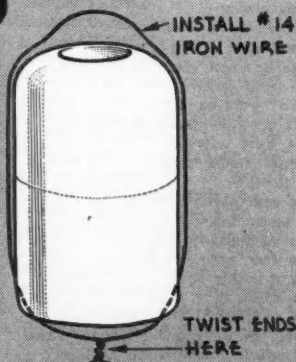
Here is a method which we have used in repairing certain types of Delco-Remy starters where the armature is rubbing the field pole-pieces. We replace the bushing in the drive-end of the starter, using Delco-Remy bushing No. 810620; but the commutator end frame is not bushed, and if the hole is badly worn the only remedy is to install a new end frame.

To save the installation of a new end frame we ream the hole out in the old one to take a Delco-Remy bushing, No. 810620, which is the same as is used in the drive end. This method of repair saves worn end frames and makes it a simple matter to replace bushings at a later date.

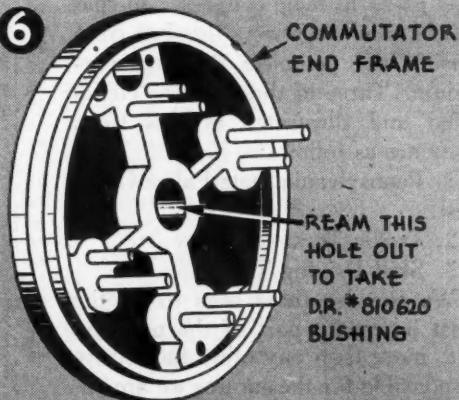
4



5



6





Robert I. Gayley

LOOKING back on the driver handling methods we employed several years ago we know now that we were very fortunate in having the com-

paratively low accident rate and the comparatively low maintenance cost that we did—which, by today's standard, however, was very high. Those days we hired any man who had a driver license, an alleged experience in handling trucks and a suitable personality.

We felt that the burden of proof of suitability was the driver's. However, what we did not consider was that, in the final analysis, we held the bag and that in most cases we had more to lose than the driver.

Today we are employing an unusual driver training program—one which to the best of our knowledge is not being excelled anywhere. The course is scientific in that every part of the various tests we make is designed to tell us the maximum about our trainee with respect to the presence or absence and the strength or weakness of those characteristics that make a good driver. Actually what we get is an advance and reasonably accurate picture of the man, or woman, in operation on the route under all possible conditions.

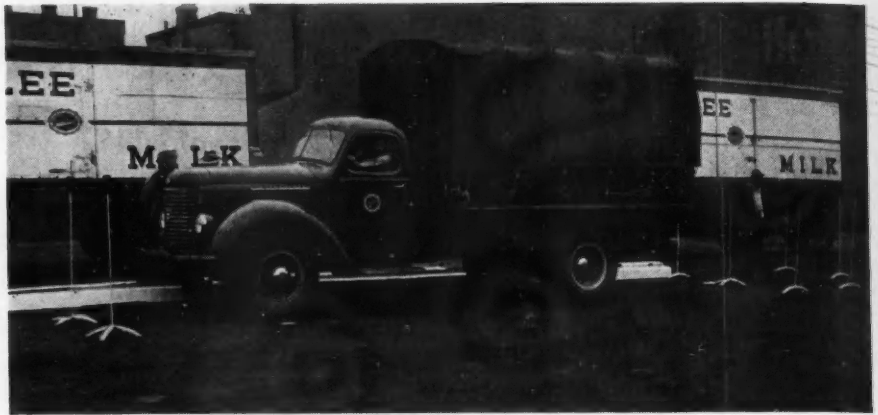
Three Major Tests

The general procedure of our driver training program was outlined in our discussion of training women drivers in the March, 1943, issue of COMMERCIAL CAR JOURNAL. That procedure was not designed especially for training women. They take the same course and the same tests given to male trainees. In that article, nine steps were listed as comprising the complete training procedure. Three of these will be elaborated and illustrated at this time. They are as follows:

1. Pennsylvania State Police Clinic Test.
2. Traffic Test.
3. Skill Driving Test.

We consider these tests to be the most important part of the program and, more than any other factor, are responsible for the success we are en-

(TURN TO PAGE 50, PLEASE)

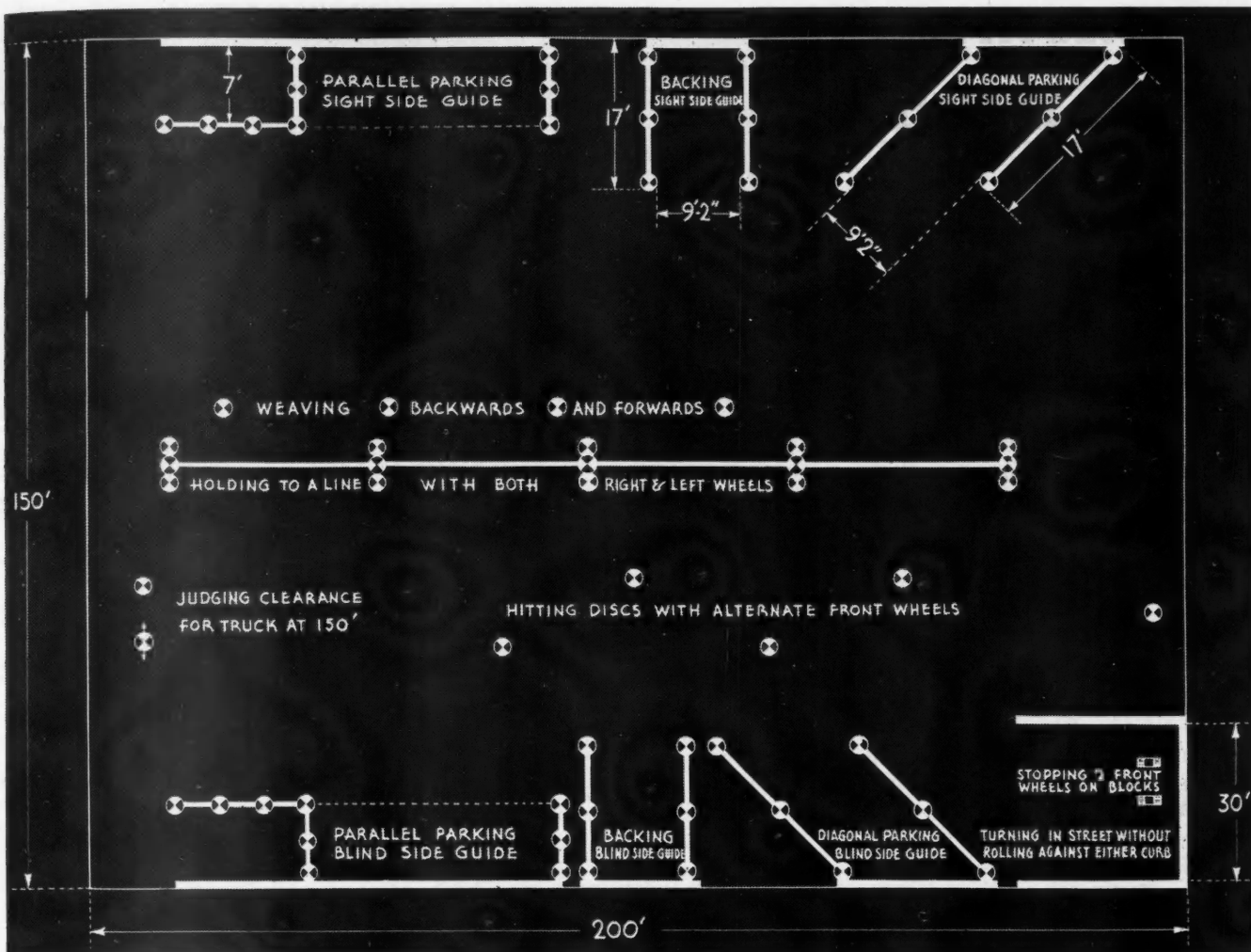


SCIENTIFIC DRIVER TRAINING

Eastern dairy fleet's program, based on own accident experience, scientific tests and route conditions, achieves high driver skill and conserves trucks

TABLE I—MASTER SCORE SHEET

- | | |
|---|---|
| (1) 1 Uses proper pressure on accelerator | (2) 24 Enters correct lane after turn |
| (2) 2 Adjusts rear view mirror | (2) 25 Enters from curb side |
| (1) 3 Adjusts window | (2) 26 Cuts sharply and moves into space |
| (3) 4 Allows motor to warm up | (1) 27 Gets into 2nd gear in proper time |
| (1) 5 Assumes alert driving position | (3) 28 Gets into proper lane for left turn |
| (1) 6 Maintains proper speed in low gear | (3) 29 Gets into proper lane for right turn |
| (5) 7 Stops truck smoothly | (5) 30 Hits car in front or back |
| (1) 8 Operates truck smoothly | (5) 31 Hits car on either side |
| (1) 9 Checks gears for neutral position | (2) 32 Gives proper signal at proper distance |
| (1) 10 Closes doors securely | (2) 33 Checks traffic |
| (1) 11 Depresses clutch pedal | (5) 34 Gives signal for left turn |
| (2) 12 Cuts corner | (3) 35 Gets into proper position |
| (3) 13 Keeps both wheels touching line | (1) 36 Increases pressure on accelerator |
| (1) 14 Cuts corner too wide | (4) 37 Checks all traffic when nose is out |
| (5) 15 Moves continuously—no stops | (2) 38 Uses brake excessively |
| (3) 16 Opens door when driving | (2) 39 Appears nervous |
| (5) 17 Stops at proper spot | (1) 40 Shifts gears smoothly |
| (2) 18 Stalls engine | (2) 41 Keeps eyes on road |
| (1) 19 Backs smoothly | (1) 42 Drives in correct lane |
| (2) 20 Observes all traffic and gives stop signal | (2) 43 Gets out on curb side |
| (2) 21 Spots vehicle behind which he'll park | (5) 44 Exercises caution at intersections |
| (2) 22 Straightens front wheels at proper time | (1) 45 Moves into 2nd gear without clashing |
| (1) 23 Turns wheels to left at proper time | (1) 46 Maneuvers more than necessary |
| | (2) 47 Checks traffic through rear mirror |
| | (5) 48 Obeys traffic signs |
| | (2) 49 Pulls into proper position at curb |
| | (2) 50 cuts front wheels to curb |
| | (2) 51 Puts gears in reverse |



by **ROBERT I. GAYLEY**

Safety Director, Supplee-Wills-Jones Milk Co.
Philadelphia, Pa.

TABLE II—TRAFFIC TEST SCORE SHEET

Name	Weather Conditions										
Date	Time of Day										
Truck	Familiar with Truck										
Score											

	A	B	C	D	E	F	G	H	I	J	K
1. Truck Inspection	25	10	2	3	5						
2. Checking driver	11	9	56	53	59	4					
3. Starting engine	11	52	47	58	41	1	57	18			
4. Starts test	27	64	65	48	33	32	28				
5. Proceeds west on Meion Ave. to 50th St.	65	12	14	24	32	29	33	44			
6. Left turn on 50th St. to Lancaster Ave.	65	12	14	24	63	60	44	32	28	60	
7. R. turn on Lancaster Ave. to 59th St.	62	12	14	24	44						
8. Left turn on 59th St.	20	49	50	55	7	68	51				
9. Park on down grade	9	56	53	59	47	64	67				
10. Starting engine	42	32	47	65	64	46	33	24	60		
11. Proceeds to bottom for "U" turn	20	49	7	50	55	68	52	61	62		
12. Park on up grade	9	56	53	59	47	64	58	57	65	1	44
13. Starting engine	65	12	14	24	63	41	44	48	29	32	65
14. L. turn, Oxford St.	12	14	24	29	32	60	65				
15. R. turn, Oxford St. to 63rd St.	12	14	24	65	44	63	28	32	33		
16. R. turn, 63rd St. to Columbia Ave.	12	14	24	65	29	32	33				
17. L. turn, Columbia Ave. to 60th St.	12	14	24	66	41	28	32	44	60		
18. R. turn, 60th St. to Lancaster Ave.	12	14	24	66	29	32	60				
19. L. turn, Lancaster Ave. to 59th St.	12	14	24	66	63	28	32	33	44		
20. R. turn, 59th St. to Columbia Ave.	12	14	24	66	44	63	28	32	60		
21. L. turn, Columbia Ave. to 54th St.	12	14	24	66	41	29	32	33			
22. L. turn, 54th St. to Berks St.	12	14	24	41	44	48	65	29	32	33	
23. R. turn, Berks St. to 56th St.	12	14	24	65	28	32	33	44			
24. R. turn, 56th St. to Overbrook Ave.	12	14	24	65	63	29	32	33	44	60	
25. L. turn, Overbrook Ave. to 54th St.	12	14	24	65	63	44	41	29	32	60	
26. R. turn, 54th St. to City Ave.	12	14	24	65	63	44	29	32	48	33	
27. R. turn, City Ave. to Conshohocken Ave.	12	14	24	44	41	65	60	63	66	29	32
28. R. turn, Conshohocken to Belmont Ave.	12	14	24	65	63	41	29	32	65		
29. R. turn, Belmont Ave. to Girard Ave.											
30. To Training Field											

Examiner.

- (1) 52 Place gear shift in low gear
- (1) 53 Pushes starter button or pedal correctly
- (1) 54 Puts gears in neutral
- (1) 55 Sets hand brake
- (1) 56 Turns on ignition switch
- (1) 57 Releases clutch properly—smooth start
- (1) 58 Releases hand brake
- (1) 59 Releases starter as soon as motor catches
- (5) 60 Tries to beat light
- (1) 61 Rolls back on hill
- (2) 62 Stalls on hill
- (2) 63 Follows car ahead too closely
- (1) 64 Selects correct gear
- (1) 65 Uses correct speed
- (1) 66 Keeps an even speed
- (2) 67 Eases front wheel back away from curb
- (1) 68 Turns off ignition switch
- (2) A—Gas
- (2) B—Oil
- (2) C—Water
- (2) D—Horn
- (2) E—Lights
- (2) F—Signals
- (2) G—Brakes
- (2) H—Tires
- (1) I—Gear shift position
- (1) J—Windshield wiper
- (1) K—License Tags

SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 48)

joying in having skilled drivers, a low accident rate and a great reduction in related maintenance costs.

Police Clinic Test

The Pennsylvania State Police Clinic has some of the finest equipment in the country to measure those physical characteristics that have to do with the control and operation of motor vehicles on highways under all possible conditions. It was established by the state to determine the reason for automobile accidents and to test drivers involved in major accidents, especially repeaters. Here, we put our trainees through the following tests:

1. Visual acuity. Inasmuch as 95 per cent of the decisions a driver must make in traffic come through his eyes, we feel it is necessary to know how good, or poor, our prospective driver's eyesight is. The Snellen Test is used and our limit of acceptance is 20/40 in each eye, corrected or natural. Originally, we insisted on a perfect 20/20, corrected or natural, and that's all we actually accepted. Today, however, with practically nothing but over-age men available, we were obliged to drop to 20/30 and now to 20/40. We hold women drivers to 20/30.

2. Color blindness. We test only for green, amber and red. Recognition must be 100 per cent true.

3. Peripheral vision. We want to know how far the prospective driver can see out of the sides of his eyes while looking straight ahead. A driver with narrow peripheral vision cannot see vehicles that dart out of side streets, children or pedestrians who may suddenly step out between parked cars, etc., in time to avoid collision. We insist upon 65 deg.

4. Reaction time. We make this test to eliminate drivers who take a long time to act when an emergency presents itself. Passing is 5/10 sec.

Other tests are available at the clinic but we pass these by because
(TURN TO PAGE 78, PLEASE)

TABLE III—SKILL DRIVING TEST

Name _____	Date _____
Company _____	Make of Truck _____
Examiner _____	Overall Length _____
Score _____	

1. WHAT WOULD YOU CHECK on your truck before leaving for the day's run?
(Check only items missed)

Tires	Brakes	Horn	Lights	Mirrors	Gas	Oil	Water
Turn Signals—(If Installed)	Windshield Wiper			License Tags			

6 State Motor Code Questions.
(Check only questions unanswered)

1	4
2	5
3	6

2. PARALLEL PARKING—Left Side Guide

This can be done with one turn of the wheel.

Count 1 for every restart after entering parking space, 5 for every time stanchion is hit, 1 for every time curb is hit and 1 for each inch or fraction thereof over 12 inch total left wheels are from curb when driver says he is parked.

Restart	Stanchions Hit	Curb Hit	Distance over 12 inches Wheels Are From Curb
---------	----------------	----------	---

3. BACKING INTO CURB—Left Side Guide

Guide on left side stanchions and greatest width of vehicle at two points should not be over 1 inch from stanchions. Rear of vehicle should be within 2 inches of face of curb.

Count 1 for each inch or fraction thereof over 2 inches rear of vehicle is from face of curb. Count 1 for hitting curb, 5 for hitting stanchions, 1 for each restart and 1 for each inch or fraction thereof and 1 inch at two extreme points of vehicle from guiding stanchions.

Distance from Curb	Curb Hit	Stanchion Hit	Restart	Distance From Side Stanchion
--------------------	----------	---------------	---------	---------------------------------

4. FRONT DIAGONAL PARKING—Guide Left Side

Guide is on left side and greatest width of vehicle at two extreme width points should be within 1 inch of guiding stanchions. Front of vehicle should be within 2 inches of face of curb.

Count 1 for hitting curb, 5 for hitting stanchions, 1 for each restart and 1 for each inch or fraction thereof over 1 inch that two extreme points of vehicle are from left side stanchions. 1 for each inch or fraction thereof over 2 inches front of vehicle is away from face of curb.

Distance From Curb	Curb Hit	Stanchion Hit	Restart	Distance From Side Stanchion
--------------------	----------	---------------	---------	---------------------------------

5. FORWARD WEAVING

This can be done without wheels crossing side clearance markers.

Count 1 for crossing side markers, 1 for each restart and 5 for every stanchion hit.

Crossed Side Markers	Restart	Stanchion Hit
----------------------	---------	---------------

6. BACKWARD WEAVING

Rules same as No. 5

Crossed Side Markers	Restart	Stanchion Hit
----------------------	---------	---------------

7. FORWARD ON STRAIGHT LINE—Left front wheel on line.

Contestant will start at end of line and proceed down line keeping wheel on line and stopping with extreme front of vehicle within 2 inches of standards on opposite end. Lane is divided into 4 sections.

Count 1 for each section in which wheel leaves line, 1 for each inch or fraction thereof over 2 inches front of vehicle is from stanchions when truck is stopped. Count 1 for each restart and count 25 for hitting stanchions.

Stanchion Hit	Off Line	Restart	Distance From Stanchion
---------------	----------	---------	-------------------------

8. BACKWARD ON STRAIGHT LINE—Left Front Wheel On Line

Same as No. 7, except backing.

Stanchion Hit	Off Line	Restart	Distance From Stanchion
---------------	----------	---------	-------------------------

9. FORWARD ON STRAIGHT LINE—Right Front Wheel on Line

Same as No. 7, except right wheel on line

Stanchion Hit	Off Line	Restart	Distance From Stanchion
---------------	----------	---------	-------------------------

10. BACKWARD ON STRAIGHT LINE—Right Front Wheel on Line

Same as No. 8, except right wheel on line

Stanchion Hit	Off Line	Restart	Distance From Stanchion
---------------	----------	---------	-------------------------

11. PARALLEL PARKING—Right Side Guide

Same as No. 2, except right side guide

Restart	Stanchion Hit	Curb Hit	Distance over 12 inches Wheels Are From Curb
---------	---------------	----------	---

12. BACKING INTO CURB—Right Side Guide

Same as No. 3, except right side guide

Distance From Curb	Curb Hit	Stanchion Hit	Restart	Distance From Side Stanchion
--------------------	----------	---------------	---------	---------------------------------

13. FRONT DIAGONAL PARKING—Right Side Guide

Same as No. 4, except right side guide

Distance From Curb	Curb Hit	Stanchion Hit	Restart	Distance From Side Stanchion
--------------------	----------	---------------	---------	---------------------------------

14. PARKING BOTH FRONT WHEELS on Top of Mounting Blocks

Count 25 points for failure to stop on top 4 blocks or 25 points for missing blocks with both or either wheel.

Failed to Stop on Block	Missed Block
-------------------------	--------------

15. CROSSING 4 STAGGERED DISCS with front wheels, alternating L & R without stopping or backing.

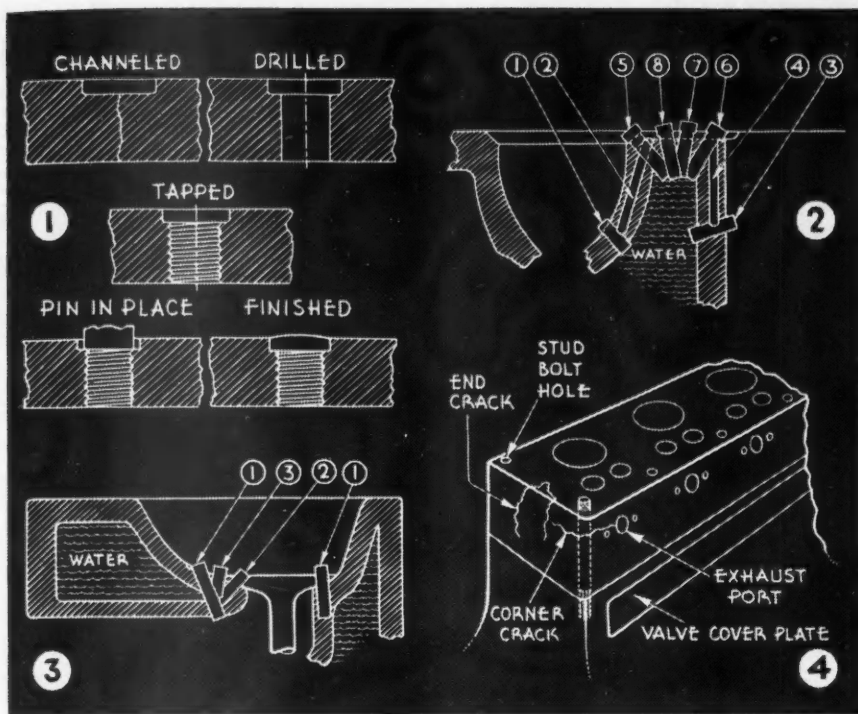
Count 5 for each disc missed and 5 for each stop or restart

Missed Disc	Stops or Restarts
-------------	-------------------

16. JUDGING FRONT CLEARANCE from 150 foot distance. Standards are set as directed by driver at 150 foot.

Count 1 for each inch or fraction thereof from extreme width of front of truck and 25 points if unable to enter space without striking stanchion.

Distance over Clearance	Struck Stanchion
-------------------------	------------------



The sketches grouped in Fig. 1 show the basic procedure for lacing the pins through the cracks. Channeling, however, is necessary only in combustion chamber cracks. Success of cold welding repair depends largely upon the exact and skilful handling of the various steps in this fundamental operation. Fig. 2 shows a typical L-head valve seat repair. Two types of valve port cracks in a Chevrolet cylinder head are shown repaired in Fig. 3. Fig. 4 shows how freeze and strain cracks in an engine block may be repaired by this process

COLD WELDING TECHNIQUE EXPLAINED

Data reveals basic procedure is same as lacing. Process not complicated but exacting. Tools and supplies simple

EDITOR'S NOTE: The data for this article was excerpted from a technical report prepared by the Transportation and Maintenance Activity Section of the Society of Automotive Engineers, at the request of the Vehicle Maintenance Section, Division of Motor Transport, Office of Defense Transportation. Fleet operators desiring a copy of the complete report can obtain one by writing L.103 on the free postcard to be found in this issue.

THE repairing of cylinder blocks, cylinder heads, etc., by the method known as cold welding has for years been known as lacing. Because relatively few operators knew about cold welding, it had not been used very extensively until the war began and material shortage

made parts impossible or hard to obtain.

With the emphasis on repair rather than replacement, the cold welding method has found wider acceptance, although it has been retarded somewhat by the secrecy which surrounded it. Some cold welding specialists have refused to permit the vehicle operators to observe work in process and failed to give them any description of it. Because of this, operators to some degree lacked confidence in its practicability.

Now, however, the veil of secrecy

has been lifted by an SAE report which explains the procedure to be used for the cold welding of many specific types of repair. The report states that 95 per cent of the engines suffering from the following types of failures can be successfully repaired:

1. Cracks running from valve seat to cylinder wall.
2. Cracks in crankcase running full length and through main bearing support.
3. Cracks and holes in crankcase caused by failure of connecting rod.
4. Cracks in exhaust ports.
5. Cracks in valve chamber.
6. Cracks in the head of an L-head engine.
7. Freeze cracks where a piece of metal is missing.
8. Cracks either vertical or horizontal behind valve guides.
9. Cracks in cylinder head or rocker-arm bolt holes.
10. Cracks in water pump bodies.

The method is not foolproof. However, such failures as have been encountered have been traced to a lack of competency or training on the part of the mechanic who made the repair, or to lack of maintenance of the engine by the operator.

Most automotive mechanics would not be capable of performing the work without some training, despite the fact that it is not particularly complicated. The work is tedious and exacting, but not more so than most of the work done by machinists.

Kerkling & Company, Inc., Bloomington, Ind., operates a school which trains mechanics to do this work. There is no tuition charge.

Necessary Equipment

The necessary tools and supplies required for cold welding are as follows:

A supply of commercially available, special purpose sealing compound; 1/4-in. electric drill; special purpose rod in 1/8, 3/16, 1/4 and 3/8-in. sizes; taps in 6/32, 10/32, 1/4—
(TURN TO PAGE 122, PLEASE)



Fleet operators whose business is spread over a large territory and who are obliged to maintain garages and service facilities on the scene of operation are fully aware of the many problems incident to such a set-up—proper maintenance, tools, manpower, management, etc.

Dugan Brothers, Inc., a large eastern bakery, has solved the problem of servicing 1585 vehicles at the home base and 22 widely scattered branches in a unique way.

1. Branch shop work is confined to tune-ups and general preventive maintenance.

2. All repairs, whether carburetor or ignition work, or major rebuilds, are handled in the main shop in Newark, N. J.

3. A traveling supervisor regularly checks every truck in every branch to determine if each vehicle is up to the company standard.

The result is a very smooth operation, the details of which are worth close study.



At the top of this page are shown, at left, a general view of the engine rebuilding department in Dugan Bros. main repair shop in Newark. Each man here is a specialist in certain type of rebuilding. At the right is a view of the average facilities service found in a typical branch shop. Small picture above shows the reassembling of engines, transmissions, rears, etc., after return from the rebuilding specialists

SERVICING A SCATTERED FLEET

Bakery fleet operator coordinates maintenance of 1585 vehicles operating from 22 branches in four states by employing uniform PM checked by traveling supervisor

by F. C. BENITZ

Transportation Manager, Dugan Brothers, Inc., Newark, N. J.



F. C. Benitz

THE problems encountered in the servicing of a scattered fleet such as we operate are many, but it is our conviction that we have found the solu-

tion of many of these problems by the preventive maintenance program we use, by the care with which all repair and overhaul work is performed and supervised, by the unit method of repair and by the use of specialist mechanics.

We operate over 1500 trucks, 50 tractor-trailer combinations and 35 passenger cars, covering a large territory which includes parts of the states of New York, New Jersey, Connecticut and Pennsylvania.

During the past year our fleet traveled 13,151,453 miles, with an average gasoline consumption of 9.22 m.p.g. and an average oil consumption of 229 m.p.q. This record proves


[illegible]

One of the important requirements necessitated by the change-over from tank cars to tank trucks was new cost records. The forms illustrated

Six rebuilt used tractor-trailers now replace two rail tank cars and deliver 10 million gal. for current six-month period, using 83.3% of maximum capacity



Robert R. Spencer



Robert R. Spencer

LAST May, when ODT issued its directive banning short haul rail shipments, we faced the alternative of establishing a new method to serve a sizable percentage of our oil department customers or of losing them altogether.

Obviously, our only possible "out" lay in converting from tank cars to trucks—if such a conversion could be made practical. This change-over, of course, would entail a complete revamp in our handling of out-of-town accounts—delivery schedules, maintenance, record keeping, even pricing. However, we made the shift, and the mechanism of our revised delivery setup seems to be functioning smoothly.

Fig. 7

TIRE RECORD
BELCHER OIL COMPANY—MIAMI, FLORIDA
 TRUCK No. _____

O. D. T. No. _____		CLASS _____		1943	
SERIAL No.	CONDITION	DATE	SERIAL No.	CONDITION	DATE
RF					
LF					
RRI					
RRO					
LRI					
LRO					
TRAIL					
RRI					
RRO					
LRI					
LRO					
SPARE					
SPARE					

REPAIR SHOP
 Date _____
 Truck No. _____
 Mechanic's Approximate Hours _____
 Outside Labor _____
 Parts Purchased _____
 Work Performed: _____
 Remarks: _____

Fig. 1 DAILY DRIVER'S REPORT
 Date _____
 Driver _____ Truck No. _____
 Hours of Use _____
 Gas Consumption _____ Lube Consumption, qts. _____

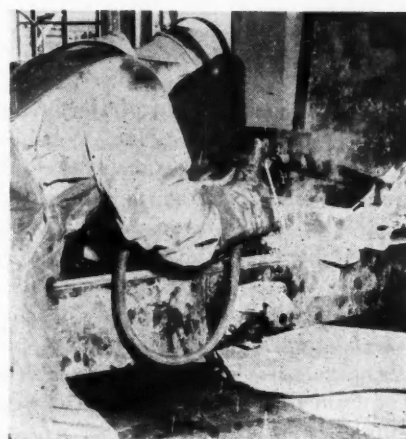
SPEEDOMETER READING
 Before _____ After _____ Total _____
 Over-the-Road Trips _____ Gallons Delivered _____
 Local Trips _____ Gallons Delivered _____
 Totals _____
 Over-the-Road Miles _____
 Local Miles _____
 Destination—Over the Road _____
 Daily Road Expense _____ \$ _____
 Repairs _____
 Tires _____
1908 Reels—1-43



Faced with the possibility of losing 40 distant, all year customers who purchased fuel oil in tank car lots, this southeastern Florida oil distributor seized upon the idea of making bulk shipments in tank trucks. Heretofore, he employed tank trucks only for local deliveries.

Against the idea loomed many obstacles. There would be new equipment to buy, if available; more men to employ; more trips to make to deliver equivalent quantities—and so on. For the idea was the speculative urge and a desire to hold this stable business. The die was cast in favor of trucks. The results speak for themselves. Even though it takes three tank trucks to deliver the equivalent of one tank car shipment the fleet came through with 6,000,000 gal. for the first six-month period, and far greater deliveries scheduled for the current six-month period.

Is everybody happy? Read the details—an interesting chapter is being written on the old controversial subject of tank cars and tank trucks.



Shop facilities maintained to service plant and marine equipment were employed for the rebuilding of the six mismatched, used tractors and trailers. Above: Frames were reinforced by arc-welding 7/16-in. steel plates to outside members. Below: Rear springs were built-up by adding four leaves to the main spring and two to the overload spring



above, including those required by the ODT, are explained in detail in the following pages

Established in 1915, when Miami was only a small town, the Belcher Oil Company is southeastern Florida's pioneer wholesaler of fuel oils, distillate, road oil and asphalt. As a separate department, the firm also operates a road-construction business.

The company's oil distribution extends northward to Vero Beach and southward to Key West, a total north-and-south distance of about 300 miles. Belcher has receiving and distributing plants at Miami and at Port Everglades, the latter near Fort Lauderdale, 25 miles north of Miami. Thus our over-the-road shipping points are approximately equi-distant from farther delivery limits.

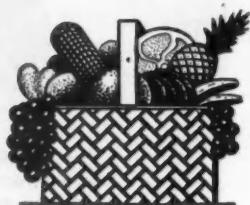
To handle this section of our business the firm operates 15 tank trucks of 825 to 1050-gal. capacity, seven transport (tractor) trailers, each carrying 3200 to 3400 gal., and three 1/2-ton pickup jobs—a total of 25

units, the product of several manufacturers. Our equipment also includes twenty-eight railroad tank cars of 10,000 gal. capacity. Of these we own 20 and lease the others.

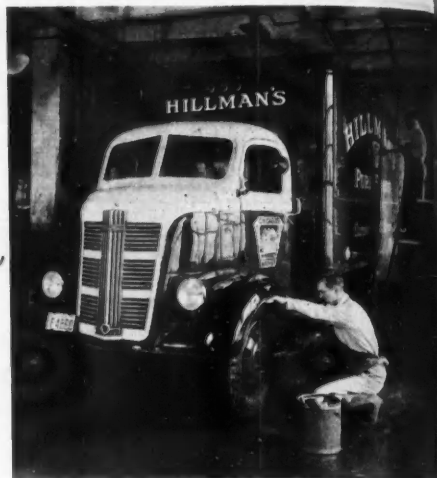
For water shipments we have 10 steel barges, having a total capacity of 17,000 barrels—almost 3/4-million gal.—and four diesel tugs, all company owned.

Previous to June of last year, Belcher made oil deliveries by truck in Greater Miami, only. This part of our operation involved only 30,000 miles annually. Deliveries to customers in the northern sector of our territory, where most of our larger accounts are located, were made by rail. Oil of the type ordered was pumped from storage tank to tank car, and the railroad completed delivery.

The May, 1942, ODT ruling, effective June 1, eliminated rail shipments (TURN TO PAGE 102, PLEASE)



National truck leasing organization surveys each lessee's requirements and adapts own three-point PM program to individual fleet maintenance



Frequent washing and polishing is given all vehicles. Note the convenient step platform

HOW HERTZ CONSERVES

THE management of Hertz Drive-urself Stations, Inc., considers itself very fortunate that the maintenance program developed during the past 10 years is proving adaptable to wartime problems in servicing a 4000-truck fleet of many types, including heavy-duty tractors and semi-trailers and about 700 passenger cars—especially since this equipment is distributed in 30 principal cities. In addition to its own branches, there are Hertz Licensed Operators in 125 other points from coast to coast in the United States and Canada, where the same standards of service must be maintained.

This equipment is serving the transportation needs of several hundred customers in many different trades and industries, including milk distributors, steel manufacturers, wholesale grocers, meat packers, linen supply companies, dry cleaners, wholesale druggists, beer and soft drink distributors, department stores and many others.

Part of the success of the program is due to the exact knowledge of each lessee's maximum transportation requirements and to the provisions made to insure the uninterrupted availability of those requirements. This is accomplished by the Hertz

Traffic and Route Survey that determines the exact number and kind of trucks or tractors and trailers that will most efficiently serve the customer's transportation needs, and that will come within the various government restrictions.

The second part of the program is the maintenance procedure which includes garage facilities, PM inspections, repairs, washing, repainting; providing gasoline, tires and lubrication; the clerical work incident to time and mileage recording, as well as the many other necessary services such as procuring licenses, insurance, etc. In addition, road service facilities, including tow trucks, are maintained for emergency service. A supply of transient trucks also is provided for stand-by service.

To round out customer service, as well as to improve vehicle performance, Hertz does not overlook the driver angle. The Hertz lease gives its customers complete driver control. Thus, drivers cannot be supervised except by customer's direct request, or in case of unreasonable equipment abuse. However, the company voluntarily cooperates with all drivers to help them and stimulate them to give more careful attention to their trucks, and to report promptly any items



needing adjustment or repair. It has been the company's experience that most drivers welcome constructive suggestions toward safer and more efficient driving, especially during these war-emergency times when they realize that the continuation of their jobs may depend to a large extent on how carefully they handle their vehicles. To maintain interest in this direction, the company has developed its own driver safety program with medal awards for safe driving records. Driver interest and cooperation has been very satisfactory.

The foregoing should provide the answer to the most frequently asked question concerning our operation, namely, "In view of the fact that the drivers of Hertz vehicles are not Hertz employees, do you experience an abnormally high vehicle abuse?"



The Hertz PM program varies its inspection schedules according to the needs of each customer, but all vehicles get basic checks



Garage accommodations for the several hundred Hertz customers, representing many trades and industries, are arranged according to specific needs

TRUCKING EQUIPMENT

by **RANDALL R. HOWARD**

Based on Interview with

W. L. JACOBS, President

Hertz Drivurself Stations, Inc., Chicago, Ill.

Isolated cases of abuse can be recalled, of course, but the average fleet driver handles his vehicle with care and consideration.

Origin of Maintenance Program

Established about 17 years ago for the rental of passenger cars through a nation-wide chain of rental stations, the original practice was to replace rental cars after a year's operation; hence, maintenance was a simple problem. But with the starting of the truck lease plan, which now represents 90 per cent of the business, it became necessary to enlarge the maintenance program because of the longer time that trucks were kept in service.

The current maintenance program was inaugurated about 10 years ago. At that time a rigid inspection policy

was started. It has been steadily improved to meet the needs of their particular type of operation. Basically, the PM Service Plan followed by Hertz is the plan developed by the General Motors Truck Co., with which Ralph A. Desmond, National Superintendent of Maintenance for the Hertz organization, has had considerable experience in setting up and supervising in the various GMC dealer and fleet shops.

It was the objective for the Hertz Maintenance Department at that time to show a definite per unit operating cost reduction each year. It was expected that such a reduction was practicable for the various fleets, by reason of the cumulative experience and the strict application of their preventive maintenance program. Of course, it was realized that eventually

there would come an end to such possible maintenance cost reductions. But speaking frankly in May, 1941, to a group meeting of their shop superintendents in the various cities in which Hertz is operating, Ralph Desmond told them that he did not yet know how low it is possible to go in the reduction of the maintenance cost of a motor fleet without deferring maintenance.

He realizes that just now, during the present war-emergency, that circumstances beyond their control are having a very definite effect on maintenance costs. They have higher wages. Parts are becoming more difficult to get and costs are increasing. The back-order situation is making it necessary for them to do many jobs over because of lack of proper material. They are going to be faced with the necessity of using substitute materials, which they realize do not have the life and stability of genuine parts.

The Hertz policy always has been to carry only a 60 to 90-day supply of parts and supplies. This policy is considered to be even more important today, since to carry a large supply of extra parts might delay the repair of other trucks in other fleets
(TURN TO PAGE 112, PLEASE)

EYEING THE FUTURE



ALUMINUM AND POST-WAR VEHICLES

New and stronger aluminum alloys and a better grade of secondary alloys together with lower prices have possibilities

by FRANK JARDINE

Chief Engineer, Castings Division, Aluminum Co. of America

EDITOR'S NOTE: In the midst of war and the all-out effort to attain Victory, the purpose of this department is to keep an eye on the future and to play a pin-point of light on the mechanical and technical progress that is certain to be one of the war's benefits, paradoxical as it may seem to associate good with devastating evil. This department will appear irregularly, depending solely upon the ability to procure expert views on subjects deserving exploration.

APPROXIMATELY a year ago, most engineers would insist that post-war cars should look about the same as pre-war cars, be about the same size, better streamlined, much lighter, cheaper, and cost less to operate. Today, these same engineers wonder whether it will be possible for the public to buy such a car in large quantities after paying the heavy post-war taxes, plus the tax on the car. The tax the public must pay on an automobile and on gasoline can change the type of car commonly manufactured in this country, as it did in Europe in the past. Consideration should also be given the type of car to build for export trade

PROGRESS OF BRITISH RETAIL TOOLS

Public acceptance, gasoline and manpower savings realized; delivery costs reduced

THE pooled delivery system in Great Britain has now been operating for 16 months, and today the traders concerned are able to take stock of the whole scheme in the light of their own actual experience. And the almost unanimous verdict is in its favor.

During the past 16 months the Tradesmen's Pooling System has been subjected to very many adjustments, but every one of them individually only minor and purely local. As a whole, the framework of the scheme has not been affected, and its structure remains nationally as it was first envisaged. (See article "British Report on Retail Pools," p. 47, July, 1942, issue.—Ed.)

As was to be expected, in the actual working of the plan some few incongruities made themselves apparent, necessitating slight variations and readjustments here and there, but none of these small changes hindered or



stopped even for a few hours the operation of any group. Any slight alterations in working were made quickly and smoothly in the same spirit of good will which, from the commencement, guaranteed at least a fair testing of the system. Also the

ever increasing shortness in the supply of petrol in itself was a very great and additional urge to every member of a pool to spare no effort to make it a success.

Obviously the first period of operation of the scheme was bound to be the most difficult, for during it had to be created precedents to be followed automatically thereafter. Mr. Smith's truck may need a rebore, and after the members of the pool have decided how they could manage without it whilst it is laid up, and how the cost should be shared, a precedent is created; and a similar kind of repair to another vehicle in the same group will be dealt with similarly in the future. Also, during the first months pools have been finally reshuffled, so that traders are now happier in their fellow members of each pool; for where two members could not get along well together, there has been time for one of them to trans-

inasmuch as these cars will be built for a world market. These questions and, many others which will seriously affect the selling price of the post-war car, are questions which have come up during the past year and make it exceptionally difficult to form definite plans until some of them are answered.

The amount of real work being done on pleasure cars is surprisingly small and in most plants new car ideas have not been completed on the drawing boards. There is a great deal of discussion going on regarding new designs and new design possibilities. The new designs under discussion are usually quite extreme and some of them include high compression ratio, valve-in-the-head motors for high octane gas, sleeve valve motors, rotary valve motors, two-cycle motors, and air-cooled motors. The frameless chassis has some supporters and it is almost certain there will be at least one rear-engine car built and tested. All these ideas and

a great many more will receive attention. A great many of these ideas will be tested before the final post-war car is ready for the public, but some will never go beyond the design stage.

After the war, the first car on the market will enjoy exceptional sales and manufacturers will do everything possible to get into production as rapidly as possible. If there are any new manufacturers, they will take longer to get into production than old manufacturers, but their car can be entirely new and will compete with the second post-war car brought out by the old manufacturers. The only company that will have the opportunity to make a new start and use new designs entirely will be a new company starting to manufacture its first model.

Most engineers agree that all post-war cars must be considerably lighter than the same size pre-war car. This reduction in weight will be obtained by the use of first, light-weight ma-

terials; second, improved and more economical design; and third (and only if absolutely necessary) reduction in overall size.

It will always be easier to sell the public a large car using light-weight material than a smaller car of the same weight made of heavy material. With a high gasoline tax, greater economy than can be obtained by the use of more efficient engines will be required and light weight will be required to make smaller, more economical engines possible without sacrificing performance.

In order to obtain any real benefit from a weight reducing program, it would be necessary to make approximately a 30 per cent reduction in weight of standard cars and retain today's performance. This program would require a completely new design, taking advantage of the fact that the new car will weigh 2100 lbs. in place of 3000 lbs. when designing each part to obtain proportionately
(TURN TO PAGE 138, PLEASE)

by at least 50 per cent

by **W. KINGSTON FUDGE**
Commercial Car Journal London Correspondent

fer to another pooling combination.

But perhaps the most satisfactory aspect of the past months of rationalized pooled deliveries is that the public is now definitely acquiescent, accepting the restricted delivery (and sometimes awkward delivery times) as a matter of course under wartime conditions. In the first weeks of the scheme, when the tradesman was himself perplexed and worried in trying to get the pool running smoothly, the complaints of his customers at delays in getting their purchases aggravated his difficulties. But now the system has ceased to be a novelty either to the retailers or to the general public, and the paint is no longer fresh on the plain grey vehicles with the wording "Tradesmen's Pooled Deliveries Service" appearing in small neat letters of white on either side.

The primary object of the scheme, the saving of the nation's petrol, has certainly been achieved; and on this

important count alone, the retail pools must be deemed an unqualified success. But in fact the success goes farther than fuel economy and saving in manpower; for it has effected considerable monetary saving to each and every member of every pool—in some cases cutting by 50 per cent the previous costs of maintaining a separate delivery service. Of course, the percentage saving is much greater in the case of the smaller trader, such as the small store with its single van out front idle half the time. But even the firms employing normally several vehicles find, though to a lesser degree, quite a worthwhile aggregate saving in delivery costs.

The pooling system has had also the merit of engendering a far greater spirit of cooperation between local tradesmen, making them feel more kindly toward one another. That the system of pools is universal, and that no trader can attract custom by

offering a better service than his neighbor, added to the general scarcity of all goods which has almost killed all trade competition, has fostered among all classes of retailers a friendliness patently lacking before the war. In considering the very great success of the Tradesmen's Pooling System here today, one must never lose sight of the fact that in Great Britain the retailer welcomes more gladly the stray salesman than the stray customer.

One or two of the most enthusiastic traders, say frankly they would like to see the pooling system continue after the war. But without the patriotic appeal to tradesmen and their customers, and if competition were again rife, with every trader loaded with stocks that he must sell, it is evident that there might be a very different story to write about tradesmen pulling together in rationalized delivery pools.



Line of American trucks on Ambassador bridge, Detroit, at opening of Canadian short cut between Detroit and Buffalo on Oct. 2, 1942. Map above shows the comparative distances of both routes

RESTRICTIONS LIMIT U. S.-CANADA SHORT CUT

Fleet operators report that load restrictions and uncertainty of emergency repairs offset time and mileage savings

by E. L. WARNER, Jr.

Detroit News Editor, Commercial Car Journal

CONSERVATION of tires, gasoline and motor vehicles, and the saving of manpower have been prime wartime objectives of the transportation industry in fighting the Axis on the home front. To helping achieve these objectives, the Canadian government let down the border bars last fall to permit U. S. trucks to transport war material from Detroit and Port Huron, Mich., across Ontario to Niagara Falls and Buffalo, N. Y., and thence east to their destinations. Previously, no U. S. commercial vehicles were allowed to carry loads over these Canadian highways.

Theoretically, this was a great victory for international cooperation, as it saved time and vehicle miles. Trucks operating between Detroit and Buffalo via Cleveland cover 360 miles and require approximately 16 hr. for the trip. The same trip by way of southern Ontario covers 260 miles and takes 10 to 12 hr. A saving of four to six hr. and 100 miles of travel thus is accomplished by taking the Canadian short cut. An even greater saving is achieved between Port Huron and Buffalo. Trucks making this trip by way of Detroit and Cleveland cover 420 miles in the long journey around Lake Erie. If they cross the Bluewater Bridge to Sarnia, Ont., and thence go directly to Buffalo, it is only 209 miles, thus effecting a saving of 211 miles.

Practically, the relaxation of the ban on U. S. trucks has not been as helpful as had been hoped. The Order in the Council of the Canadian Government, issued under authority of the War Measures Act, specified that shipments of war materials be allowed to go by truck in bond across Ontario. However, it has proved difficult in practice to follow this provision, which makes it necessary for the common carriers using the Canadian route to segregate their freight on the loading dock between war materials and non-war goods. This requires additional labor and handling, with manpower at a premium in the trucking industry.

The provision that all shipments be 100 per cent war goods also may hold up such shipments until a full load is on hand, to conform with the ODT regulations requiring that trucks be loaded to capacity over a considerable portion of their trips.

(TURN TO PAGE 132, PLEASE)

BRUSQUE, hard-headed "Bill" Jeffers says that he is going to keep 'em rolling. It is the conviction of this tough but very human Rubber Czar that there will be enough rubber for every need by the end of the present year and that trucks and passenger cars can continue uninterrupted on the highways so far as the supply of tires is concerned. Issue has been taken with this optimistic view, but the head of the Union Pacific Railroad expresses the view with complete assurance.

Mr. Jeffers has the reputation of never having fallen down on a job. Hence, betting is heavily on his side that he is going to lick the hardest job he has ever faced. Putting it more strongly, it is widely conceded that he has already won and has cashed in his chips because the rubber is being produced. He has left behind him great gobs of slashed bureaucratic red tape, sulphuric words and brisk squabbles with high-ranking government officials and congressional committees. Yet, he has weathered these storms without a scar and untamed. Moreover, he stands out as a highly popular administrator.

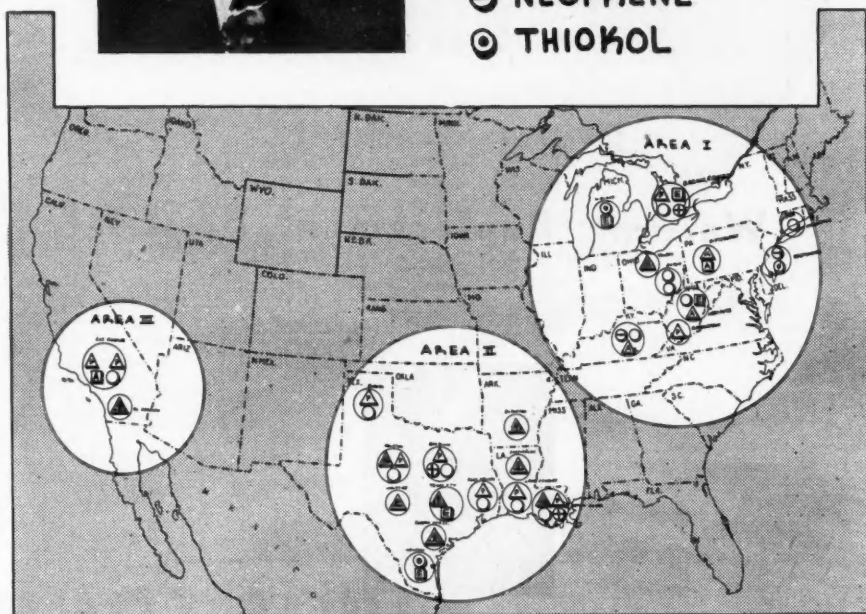
Many are ready to vote him the Oscar for popularity and administrative ability. This apparent anomaly is explained by the fact that while Jeffers fights hard, once the scrap is over he forgets it, holds no grudge, and is ready to pal with his former adversaries. For exhibit No. 1 of this agreeable characteristic notice that the heated words engendered between him and Robert P. Patterson, the able Undersecretary of War, have given way to sweetness and light and they are now Pat and Jeff to each other. The row over charges by Judge Patterson that the high octane gas program had been delayed because Jeffers nudged in on priorities for the rubber program has been washed out because each has forgiven the other and now are palsy-walsy. Perhaps even more remarkable, Jeffers has gained respect where previously he was the object of suspicion and this transmutation is due to both the ability and honesty he has shown as the big boss of the rubber program.

Born, bred and living in the railroad atmosphere, he has been a part of and grown up with his beloved Union Pacific since 1890, beginning as an office boy at the age of 14 and
(TURN TO PAGE 136, PLEASE)



KEY-TO-PLANTS

- △ BUTADIENE
 - △ PETROLEUM BASE
 - △ REFINERY CONVERSIONS, ETC.
 - △ ALCOHOL BASE
- STYRENE
 - ETHYLENE PROCESS
 - ALCOHOL PROCESS
- COPOLYMER (BUNAS)
- ⊕ BUTYL
- ⊖ NEOPRENE
- ⊙ THIOKOL



Map of the United States showing the three areas in which the production of synthetic rubber is distributed, according to Progress Report No. 2 issued by the Rubber Director, Feb. 18, 1943

JEFFERS ASSURES TIRES FOR TRUCKS

Anticipates 813,000-ton synthetic rubber productive capacity, 100,000-ton natural imports by year's end; scrap pile now 800,000 tons

by L. W. MOFFETT

Washington News Editor, Commercial Car Journal



S.A.E. REPORTS

ON:

★ Driver Training ★

★ Wartime Replacement Parts ★



Robert Cass

Digests and discussions of papers on subjects of current interest that held the spotlight at T & M meeting of engineers

EXPERIENCE WITH WOMEN DRIVERS

By M. A. Savin
Savin Express Co.

After having decided that women could be used to drive heavy-duty trucks between terminals, where no loading or unloading would be required of them, we ran an advertisement in a local newspaper. The response to this ad was highly satisfactory and we picked 22 of the most promising applicants.

These applicants were required to fill out the same application forms as men applying for a position. A physical examination was also required. The women were required to join the union. We agreed to pay them the same rate of pay as men

drivers, after their period of training was completed.

The first test we gave them was on passenger cars. The ones who seemed adept at handling these were kept and given further training on small trucks. Those who finished this course successfully were then given training on tractors. Next on the training program was instruction on driving the tractor-trailer combination. Many of the women were scared at driving such a large combination and these were eliminated from further training. Finally we had 16 women left in the class.

Men drivers were then assigned to instruct them how to back the combinations, and also how to hook and unhook the trailer. Posts were erected in a large lot and they were given instructions on how to back into loading platforms, turn corners, etc.

This course lasted six weeks, then the women drove these tractor-trailer units through the local city routes accompanied by men drivers.

Next on the program we sent them to a local vocational school for a course in automotive maintenance, not with the idea of making mechanics out of them, but to acquaint them with the various units on a truck and how they operate.

After this training period was over we employed two women on the New York to New London run with men drivers. However, the union would not allow us to use women as auxiliary drivers. And the union would not let us employ them as drivers so long as the union had men drivers on their lists.

Our conclusions are that women drivers can handle heavy-duty trucks as well as men. The training of women drivers is not going to solve the manpower problem entirely, but it will help. And as the army takes more and more men, it will soon be necessary for many operators to hire and train women drivers.

★ DISCUSSION ★

In the discussion, a representative of the Willet Co., Chicago, arose to inquire how the women were paid during the training period, and also how their time was utilized when they were not receiving instruction.

The answers given him were: They were given driver training on Saturdays only, and received no pay during the entire training period. They all seemed anxious to learn to drive heavy-duty trucks, and did not expect any pay while receiving driving instructions. When they qualified as drivers and were put on regular runs accompanied by men drivers, they were paid the same rate of pay as the men.

WARTIME REPLACEMENT PARTS

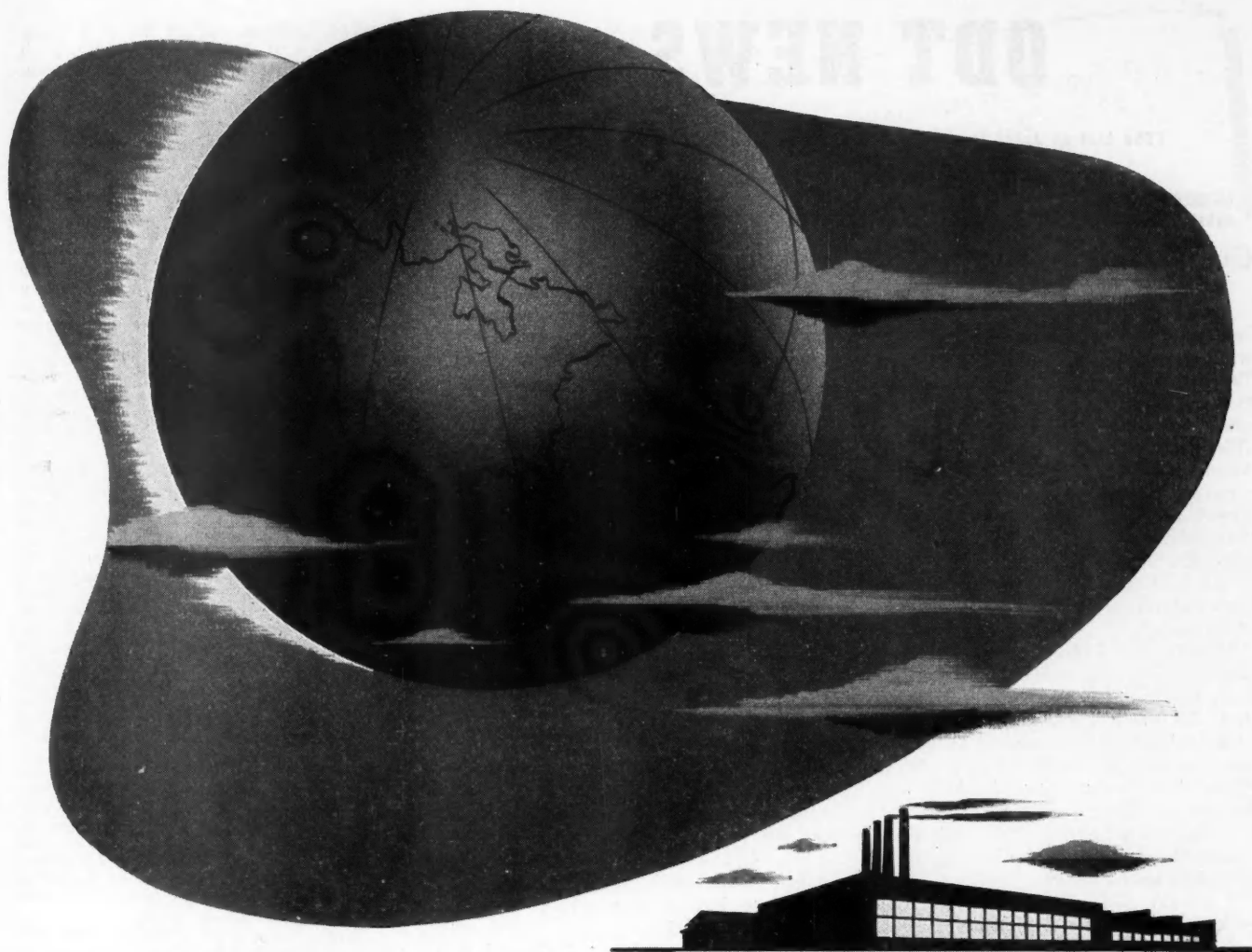
By Robert Cass
Chief Engineer, The White Motor Co.

This paper indicated that the wartime replacement parts picture from the operator's standpoint is good. It is good in the sense that no substitutions have been made which it is believed will seriously affect the economy of operation to a marked degree, and by education of both existing maintenance crews and education of drivers, very satisfactory results should be obtained.

The performance of the substitutions in any vehicles cannot yet be confirmed by actual field experience. It will be realized that in many cases the substitutions have been of recent date and we can only offer suggestions anticipating probable trends. The use of substitute materials in some units may require operators to give them closer attention and more frequent maintenance.

PISTONS: Are now being made from secondary aluminum. It is important to watch the warm-up period, and use a good quality oil.

(TURN TO PAGE 142, PLEASE)



BENDIX BUILDS TODAY *for a Better World Tomorrow!*

From dawn to dusk and through the night till dawn again, Bendix precisionists keep one goal in mind—Victory and a better world to come.

Through the colorful years of a quarter century, Bendix engineering and production leadership has been an integral part of the American automotive industry.

When America was attacked, blitzkrieg methods had already proved that swift-moving automotive vehicles were to play a dominant role in winning the war. It was only logical that our Government, facing these conditions, would

include in assignments to Bendix the continued production of automotive units similar to its peace-time products—but on a scale never before dreamed possible.

Because of this wartime use of peace-time products, Bendix will be better able than ever to serve the automotive industry when decent folk turn again to peaceful ways.

In the meantime, an important part of the Bendix wartime task is to help automotive servicemen keep war-essential civilian transportation at peak efficiency.



BENDIX PRODUCTS DIVISION

South Bend, Indiana

"STROMBERG" CARBURETORS, "BENDIX B-K" VACUUM POWER BRAKES, "BENDIX" BRAKES, "BENDIX-WEISS" UNIVERSAL JOINTS, "BENDIX" CLEANER

ODT NEWS

(The List of Joint Information Offices will be found on page 190)

Commodity Deliveries Restricted as 40% Fuel Cut Goes Into Effect in Eastern Shortage Area

A general 40 per cent cut in "T" rations for trucks, buses and taxicabs was ordered in the 12 eastern states effective May 24. The reduction was effected by extending the valid period for the second-quarter coupons from June 30 to July 25, inclusive. This was followed a few days later by Amendment 3 to General Order ODT 17 curtailing commodity deliveries in the critical area, taking effect May 27. On the same day buses and taxicabs were ordered to reduce mileage immediately by 20 per cent to insure stretching their rations and insure operation until the next ration period.

All deliveries of civilian commodities are affected; some in reduction of delivery frequency, others, the so-called luxury items, by drastic curtailment. To provide additional rations for essential transportation, a priority list was issued by the WPB.

The Amendment affects local delivery services as follows:

1. Frequency of wholesale and retail commodity deliveries is limited according to their essential nature.
2. Sunday deliveries, except ice, fresh milk and cream, are forbidden.
3. Delivery routes must be rearranged immediately to eliminate overlap or duplication.

Operators who regularly cross from the critical into the non-critical area will not be able to use their extended time "T" coupons in the non-critical states, ODT pointed out. A special supplementary Certificate of Necessity must be obtained.

This special certificate may be used to obtain third-quarter rations for use in the non-critical area from the operators' local War Price and Rationing Boards, even though the board may be in the critical area.

The object of both orders is to balance fuel consumption with the civilian ceiling of 356,000 barrels set by the Petroleum Administrator for War. ODT estimated that the "T" slash will save a net 20,000 barrels and the recent non-essential civilian driving ban on holders of "A," "B" and "C" coupons should save 30,000 barrels.

The ODT warned that the present reduction will be followed by a systematic "tailoring" of the Certificates of War Necessity of all commercial vehicle operators in the shortage area to carry the cut into the last half of the year, if necessary.

In many cases, the ODT said, Certificates of War Necessity will not provide for sufficient gasoline to make the maximum number of deliveries permitted. In no case will allotments of gasoline be increased merely to make it possible for a truck owner to make as many deliveries as specified by the order.

Issuance of third-quarter rations in the

shortage area, which normally would have been made in the two-week period prior to June 30, will be held off until the middle of July, the OPA said. These third-quarter coupons will not become valid until July 26. Operators who do not conserve their gasoline for use over the entire period will run the risk of being totally without motor fuel when their present rations are gone.

In the rest of the Nation the issuance of third-quarter commercial rations will be handled as previously announced. However, none of the third-quarter rations will be valid in the critical area until July 26. Operators running into the critical Eastern area must spread out their second quarter "T" rations for all gasoline purchased in the critical area the same as those who operate wholly within the area.

The number of deliveries specified in Appendix No. 2, Page 188, is the maximum that will be permitted for each commodity, regardless of the type of carrier involved, the ODT emphasized. Thus, if a private carrier had used up all deliveries permitted for one week, he would not be permitted to hire another carrier to make additional deliveries.

The text of Amendment 3, General Order ODT 17 is as follows:

Title 49—Transportation and Railroads

Chapter II—Office of Defense Transportation

(General Order ODT 17, Amendment 3)

Part 501—Conservation of Motor Equipment

Subpart K—Motor Carriers of Property

Pursuant to Executive Orders 8989 and 9156. General Order ODT 17, as amended (7 F.R. 5678, 7694, 9623), is hereby amended by adding to § 501.65 two additional paragraphs designated (o) and (p), respectively, by amending paragraphs (a) and (b) and subparagraph (2) of paragraph (c) of § 501.70, by adding to § 501.70 a new paragraph (d), by changing the section number of the present § 501.75 to § 501.78, by adding three new sections, designated, respectively, as §§ 501.75, 501.76, and 501.77, and by adding an Appendix No. 2, such amendments to read as follows:

§ 501.65 DEFINITIONS.

(o) The term "wholesale delivery" means the transportation of property by motor truck (1) from any place of business to any place of business at which such property, or service thereon or service utilizing such property, is sold or offered for sale at retail, or (2) from any such retail establishment to any place from which such property or service is supplied to such retail establishment.

(p) The term "retail delivery" means the transportation of property by motor truck, or of fresh milk or cream (or other products when delivered in combination therewith) by any vehicle propelled or drawn by mechanical power or animals, (1) to any person who acquires at retail that property, or service thereon, for personal, family or household use or consumption, or (2) from any such person to any business establishment at which such property, or service thereon, is supplied at retail.

§ 501.70 EXEMPTIONS. (a) The provisions of

§ 501.67, paragraphs (a) and (c) of § 501.68, paragraph (a) of § 501.69, and §§ 501.75 and 501.76, of this subpart shall not apply to or include the following:

(b) The provisions of § 501.67, paragraphs (a) and (c) of § 501.68, paragraphs (a) and (b) of § 501.69, and §§ 501.75 and 501.76, of this subpart shall not apply to or include the operation of any special equipment.

(c) The provisions of this subpart shall not apply to or include the following:

(2) Any motor truck controlled and operated by any person or persons principally engaged in farming, when used in the transportation of agricultural commodities and products thereof, from a farm or farms, or in the transportation of farm supplies to a farm or farms: PROVIDED, That this exemption shall not apply to the transportation of agricultural commodities or products thereof in retail delivery.

(d) The provisions of paragraph (b) of § 501.75 and § 501.76 of this subpart shall not apply to deliveries which are exempted by general or special permit from the provisions of paragraph (c) of § 501.68.

§ 501.75 ESTABLISHMENT OF DELIVERY AREAS OR ROUTES. (a) On or before June 8, 1943, every motor carrier shall establish, within the territory presently served by each operating unit of such motor carrier, delivery areas or delivery routes that are neither duplicating nor overlapping, and such carrier, shall prepare and currently maintain an appropriate map showing the routes so established or the territorial limits of such delivery areas, for each operating unit.

(b) No motor carrier shall perform wholesale or retail delivery service, respectively, over any given route or within any given delivery area on any greater number of days in any calendar week than the maximum weekly number of wholesale or retail deliveries, respectively, specified in Appendix No. 2 attached hereto for any commodity being delivered over that route, or within that delivery area, by such carrier during that week: PROVIDED, That the foregoing restriction shall not apply to any transportation performed for the purpose of making any wholesale or retail delivery, respectively, from one point of origin to one consignee at one point of destination of any shipment constituting a capacity load of the largest motor truck ordinarily operated by the motor carrier making such delivery.

§ 501.76 NUMBER OF WHOLESALE AND RETAIL DELIVERIES. (a) Except as provided in paragraph (b) of this § 501.76, no person shall make or cause to be made (other than by common carrier over-the-road service and local delivery service performed in the collection and delivery of through shipments), and no motor carrier shall make, from any one point of origin to any one point of destination, during any calendar week:

(1) More than the maximum number of wholesale deliveries and retail deliveries specified in Appendix No. 2 attached hereto for the particular commodity or commodities being delivered: PROVIDED, That on any day on which a wholesale or retail delivery is made, one additional wholesale or retail delivery, respectively, may be made if (i) such additional delivery involves property requiring the use of a motor truck other than the type used in making the other delivery, when such truck used in making the additional delivery is specially adapted for and used exclusively in the transportation of such property, and if (ii) both deliveries do not involve the same commodities:

(2) On Sunday, any wholesale deliveries, except of ice, or any retail deliveries, except of ice, or fresh milk or cream or other products when delivered in combination with fresh milk or cream.

(b) The provisions of paragraph (a) of this § 501.76 shall not apply when a wholesale or retail delivery consigned from one point of origin to one consignee at one point of destination constitutes a capacity load of the largest motor truck ordinarily operated by the carrier making such delivery.

§ 501.77 LIMITED APPLICABILITY. The provisions of §§ 501.75 and 501.76 shall apply only in the States of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania (except that portion which lies within the corporate limits of the cities of Sharon, Sharpsville, Farrell, and Wheatland), Rhode Island, Vermont, Virginia, (except the portions which lie within the corporate limits of the cities of Bristol and Bluefield), the District of Columbia, and the portion of West Virginia which lies within and east of the counties of Meno, Grant and Pendleton.

This amendment shall become effective May 27, 1943.

(TURN TO PAGE 188, PLEASE)



"We find that our selection of Exides for our fleet has been justified from the standpoint of over-all economy and service."

One of the heavy units operated by the Dalzell Trucking Co., Inc., of Paterson, New Jersey. Like all other units of this company's fleet, it is Exide-equipped.



...calls for Exides in the trucking field

UNUSUALLY difficult work often faces the vehicles operated by the Dalzell Trucking Company, Inc. They handle heavy and bulky materials, and of necessity operate trucks embodying special body features. It's no soft job, but these trucks can handle it.

Exide Batteries, according to a letter from Mr. Robert Dalzell, are standard equipment in this fleet... and have proven their ability to start

all types of units under all conditions. That record of dependability, repeated again and again in other operations, is one more proof that Exides can "take it" when the going is tough... and "hand it out" as well.

Long-lived, easily maintained Exide Batteries are always *Built to Last*... and will *Serve to Win*. That's important in war-time. Long-lasting equipment saves vital materials for the fighting fronts.

Exide
EXTRA DUTY
BATTERIES

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia
Exide Batteries of Canada, Limited, Toronto

OPA NEWS

Used Truck Ceiling Regulation Amendment Covers Extras, Alteration

Dealers in used trucks are provided with an alternative method for computing the "value when new" of extras purchased as original equipment in an action taken by the OPA.

Under Maximum Price Regulation 341 the value of extras purchased as original equipment, which are a factor in the computation of a base price, was based on the manufacturer's original retail list price. However, OPA amended the provision to permit dealers to use the current retail prices in the area in which the vehicle is being sold in cases where original list prices are not available. The new provision applies to all extras.

The amendment also provides a method for establishing a maximum price for a complete commercial motor vehicle formed by altering a used chassis and attaching to it a new body, a practice which has developed since the production facilities of commercial motor vehicles producers have been diverted to war production. The for-

mula reflects the ceiling price for the vehicle without alterations determined in accordance with the provisions of the regulation plus the ceiling prices for extras, materials and services supplied in making alterations and the maximum price for the new body.

Truck Recap Restrictions Lifted

Quota restrictions on the number of certificates for truck tire recapping that may be issued monthly by local War Price and Rationing Boards to eligible vehicle operators were removed May 1, by the OPA.

This action was taken to conserve rubber by providing recapping as soon as needed.

OPA also withdrew the rule that certificates for recappings or inner tubes can be issued for List B trucks only after the 25th day of the month, and then only if there is quota remaining after applications for List A vehicles are satisfied. These certificates may now be granted at any time.

Both the changes were made after con-

sultation with Rubber Director Jeffers and on his assurance that recapping material would be made available.

Procedure for getting certificates for truck tire recapping is not changed.

Used Tires for Eligible Trucks Removed from Quota Restrictions

An eligible truck operator who is unable to get rationing certificates for new tires because his War Price and Rationing Board has exhausted its quota can obtain certificates for used tires instead. The OPA has authorized local boards to issue used truck tire certificates without regard to quota restrictions.

In making the announcement, OPA emphasized that replacements, whether new or used, still can go only to vehicles included in List A in the tire rationing regulations.

Certificates for used truck tires will be issued only when the local board is assured by the applicant that the needed tires are available.

Procedure for getting a used tire is the same as for new tires.

9,735,000 Truck Tires and Recaps Issued

OPA announced that from January, 1942, to May, 1943, ration certificates had been issued for 5,252,000 truck tires, 4,483,000 truck recaps and 4,486,000 truck tubes.

WPB NEWS

Rebuilding of Trailers Encouraged

To encourage the re-assembling and rebuilding of much needed truck trailers, the WPB amended Limitation Order L-1-g.

Originally, L-1-g stopped the production of automotive truck trailers (including by implication all types of re-constructed trailers) on June 30, 1942. Today's amended order excepts "re-assembled trailers" from the prohibition. It defines "re-assembled trailers" as those built from miscellaneous, used and repair parts. The order, however, prohibits the use of more than 30 per cent of new iron and steel in the production of such re-assembled trailers.

Shop Equipment Repair Parts Exempt

Limitation Order L-270, covering the manufacture and distribution of automotive maintenance equipment, was further amended by the WPB to exempt purchase orders for repair parts for automotive maintenance equipment from the provision restricting sales of such equipment by producers to purchase orders bearing preference ratings of AA-5 or higher.

Retreading Equipment Controls Eased

All controls over the distribution of used tire retreading, recapping and repair equip-

ment have been lifted by the Office of Rubber Director.

In addition, the production and acquisition of new tire retreading, recapping and repair equipment, having a retail value of \$85 or less, is now permitted. The original order (L-61) permitted production and acquisition of tube repair or spot equipment having a retail value of \$100 or less. This provision has now been broadened to include all items of new retreading, recapping or repair equipment, except curing heads and matrices.

All applications for new equipment must be made on form PD-840.

Parts Need No Priority—Vaniman

Many owners, according to R. L. Vaniman, director of the Automotive Division of the WPB, labor under the misunderstanding that they must have a preference rating to buy a replacement part. Said he: "Owners of automotive vehicles, and this includes owners of truck fleets and transportation buses, can get their replacement parts without preference ratings, and they should not be asked for such ratings when the parts are to be used for repair."

Buna S Tires Expected

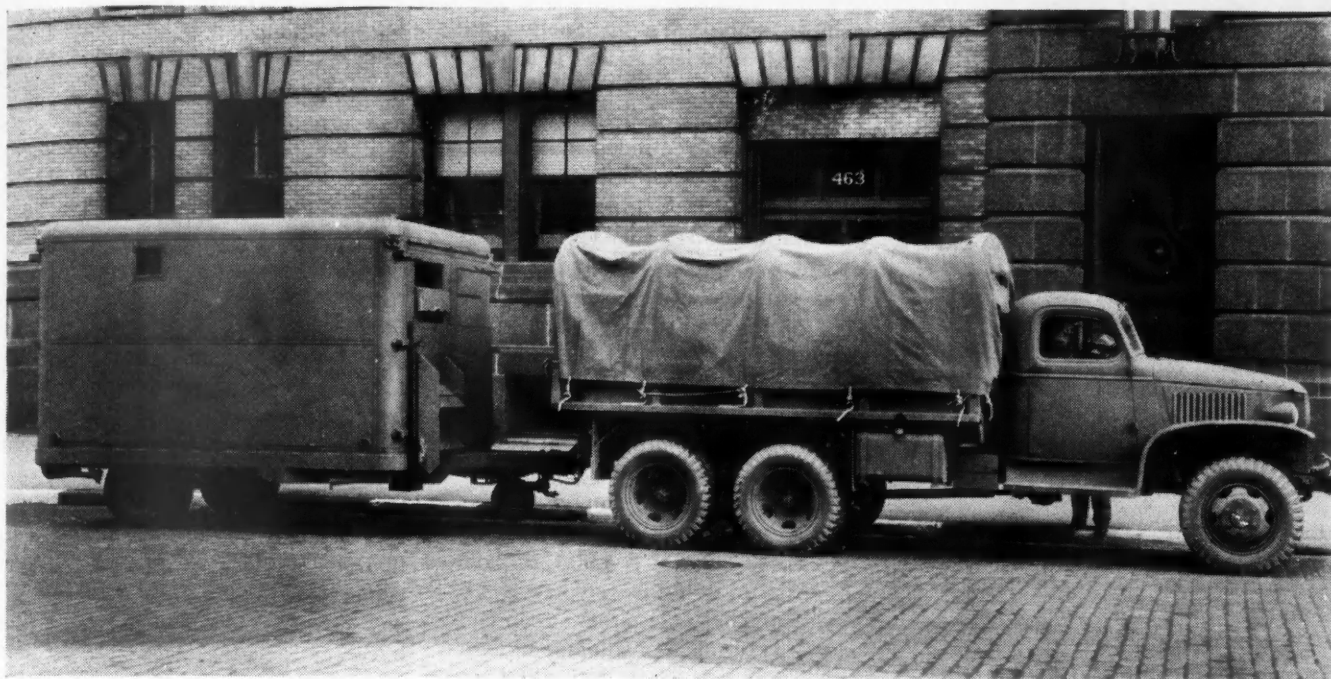
Tire and tube manufacturers of the nation were given an opportunity early in May to perfect their processes for production of these products from synthetic rubber, Buna S, through the release of limited quantities of synthetic rubber, the Office of Rubber Director announced. It was anticipated that a small number of these new tires and tubes would be ready for distribution sometime late in May or early June.

L-51 Applies to Anti-Freeze in Stock

The WPB states that the restriction in Order L-51, which limits the use of permanent type anti-freeze to tractors, trucks, buses and other commercial type automobiles and to stationary engines, applies to stocks of permanent type anti-freeze now in the hands of retail and other sellers as well as to such quantities of permanent type anti-freeze which such sellers may receive in the future. Stocks of permanent type anti-freeze carried over from last season are included in the restriction.

Order L-51 as amended was issued April 19, 1943, and prohibited the purchase or sale of anti-freeze containing ethylene glycol for use in passenger automobiles including station wagons and taxicabs.

The amended order is effective from April 1, 1943, to March 31, 1944.



—They're building Extra Combat Bodies with the same amount of material because

LINDSAY STRUCTURE S-T-R-E-T-C-H-E-S STEEL

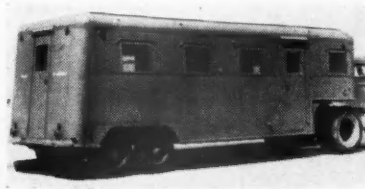
TYPICAL STEEL- AND TIME-CONSERVING
LINDSAY STRUCTURE COMBAT BODIES



Small Combat Trailer



Meteorological Station



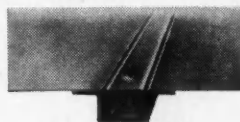
Mobile Command Post

With savings of from 15% to 40% in steel in building combat bodies, made possible by the use of the Lindsay Structure method of construction, our limited supply of steel is being stretched to make extra units.

Lindsay Structure stretches steel, too—to get all the strength in light sheet steel. That's why Lindsay Structure frameless trailers are in successful use by the U. S. Army. They withstand the blistering heat of the desert . . . the cold of the arctic . . . the humidity and termites of the jungles . . . the strain and wracking of operation over shell holes, rocks, and soft sand.

Lindsay Structure combat bodies can be shipped k.d. in minimum space. That's a vitally important extra value of Lindsay Structure today when supply lines are thousands of miles long . . . and cargo space so urgently needed.

If you have problems of weight or strength or shipping space in connection with the essential housings, partitions, buildings, or combat bodies that you are building . . . investigate Lindsay Structure. Lindsay and Lindsay, Adams-Franklin Bldg., Chicago, Ill.; or 60 E. 42nd St., New York, N. Y.



Easy to Assemble

LINDSAY STRUCTURE

U. S. Patents 2017629, 2263510, 2263511
U. S. and Foreign Patents and Patents Pending
For details, see Sweet's Catalog File

LINDSAY STRUCTURE CAN SAVE THOUSANDS OF TONS OF STEEL PER MONTH



(CONTINUED FROM PAGE 37)

of truck operators and that its recommendations for parts and vehicles were overridden by WPB, and that the views of the Automotive Division prevailed.

The Automotive Division of WPB has much to answer for, and a report was current the middle of May that it was anticipating Congressional censure by initiating a "reorganization" in which its personnel would be reduced by 50 per cent.

7500 New Trucks, 9200 Trailers

Some critics professed to see in the permission to build 7500 trucks and 9200 trailers for the stockpile during the third and fourth quarters an effort on the part of WPB to sweeten an otherwise sour record. Allotment of the 7500 trucks to various manufacturers was still being juggled during the middle of May. Allotments were all set at one time and about to be announced when a difference of opinion developed among ODT sections as to what was a heavy truck. One ODT section was not content to let manufacturers' gross vehicle weight ratings be the determining factor, and seemed to have carried its point when WPB revamped weight classifications to include engine displacement. At last report the gross vehicle weights and minimum engine displacements were correlated as follows: 20,000 lb. and up, 350 cu. in.; 27,000 lb. and up, 400 cu. in.; 40,000 and up, 450 cu. in. Over 50 per cent of the 7500 vehicles would be in the 27,000 and up classification.

L-51 Order Draws Protest

In trying to do trucks a good turn it appeared that the WPB Automotive Division had got its thumb in the wringer with its L-51 order reserving permanent anti-freeze for commercial

vehicles only. Was it another example of inefficiency; was it another effort to sweeten its record, or was it a combination of both? Anyway, WPB has been reminded that passenger cars are greater users of permanent anti-freeze than motor trucks and that the L-51 order has the effect of compelling car owners to throw away millions of gallons of permanent anti-freeze if they want to be certain of adequate protection next winter. The S.A.E. War engineering Board has asked for a modification of the order to the extent of providing car owners now using permanent anti-freeze with enough "make-up" to give them the usual protection. The Board estimates 4,000,000 gal. of make-up would be sufficient. It points out that unless this amount of make-up is made available at least 20,000,000 gal. of alcohol will have to be provided next year. (Permanent and evaporating types of anti-freeze mix but the degree of protection provided by the mixture cannot be accurately measured).

ODT Delays Decisions

Meanwhile the ODT had troubles of its own but the cause seemed to be psychological rather than Congressional. Observers noted that it was taking longer for ODT to reach decisions on minor matters than it took to put through any of the original conservation orders. A simplified reporting form for fleet operators was still being kicked around after five months of so-called discussion; a vehicle leasing amendment that should have been issued not later than December has just gone through the mill for issuance late in May; certificate revocation procedure, without which ODT No. 21 is like a pistol with the safety catch on, was still under discussion although the order which it would implement has been in effect six months, and a revised conservation order (ODT 17) which has the backing of private carriers whom it would affect, after a painful struggle of four months had finally reached the director himself and he was reported to be uncertain of its need.

Observers contrasted this "making haste slowly" with the case of ODT No. 21, which passed from conception to signature in relatively no more time than it takes to say "Turney's Turkey."

Operator Attitude Changing

These observers wondered if the psychology affecting truck operators had penetrated even into ODT circles. Truck operators pretty generally feel that the condition which made conservation necessary have changed for the better and therefore they are less inclined to be co-operative in complying with those portions of the conservation orders which do not result in direct economic benefit to them. They have it on the authority of Rubber Czar Jeffers that they will not lack for tires. Except along the Atlantic Coast and in several Northwestern States, where a shortage has just been developed, there is no lack of gasoline. New vehicles have not been available in any quantity but replacement parts have kept existing trucks rolling and current parts production plans hold out the promise of an adequate supply.

Manpower is the one big problem common to all operators but ODT is of no help to them there. In fact, the ODT conservation orders aggravate the manpower problem because of their insistence on manhour-eating paper work.

Issues Seem Unimportant

Had this psychology penetrated to the ODT hierarchy? Was it the cause of delayed decisions? It would not be surprising if it had because, while ODT had made some mistakes, there was ample evidence that ODT was generous in the administration of its orders and lenient in their enforcement, almost to the point of making the orders ineffectual. It had adhered to the avowed intent of its regulations, i.e., that they were devised to protect truck operators not put them out of business, even though some of them, if rigidly enforced—21, for instance—could have put operators out of business. But whatever the cause decisions were being delayed. And in the light of changed conditions the undecided issues seemed unimportant.

Only 20% of Fleets Report

There was the issue of the simplified quarterly reporting form for fleet operators. The ODT already had overwhelming evidence that most of the 230,000 operators with more

(TURN TO PAGE 71, PLEASE)

The Premise

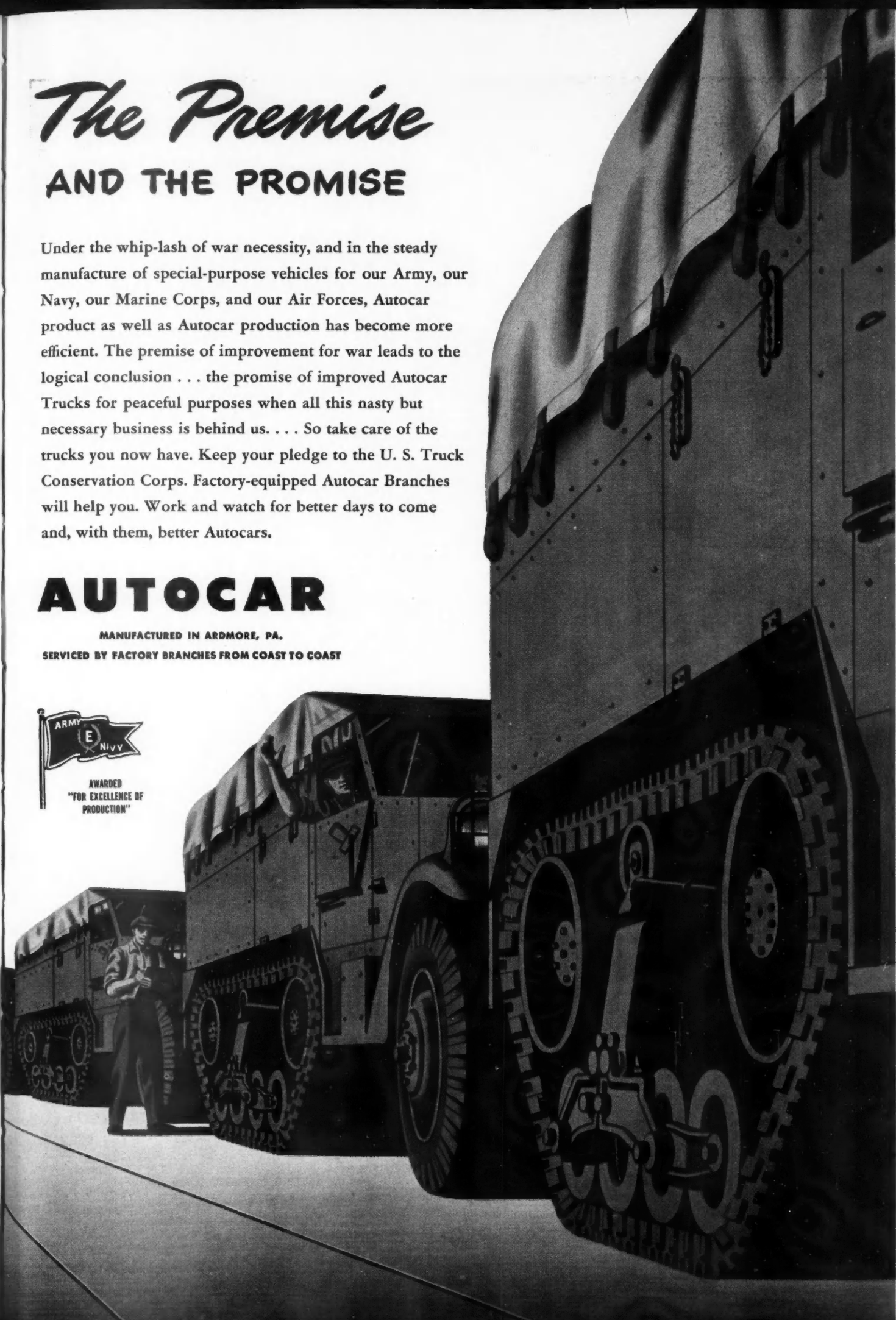
AND THE PROMISE

Under the whip-lash of war necessity, and in the steady manufacture of special-purpose vehicles for our Army, our Navy, our Marine Corps, and our Air Forces, Autocar product as well as Autocar production has become more efficient. The premise of improvement for war leads to the logical conclusion . . . the promise of improved Autocar Trucks for peaceful purposes when all this nasty but necessary business is behind us. . . . So take care of the trucks you now have. Keep your pledge to the U. S. Truck Conservation Corps. Factory-equipped Autocar Branches will help you. Work and watch for better days to come and, with them, better Autocars.

AUTOCAR

MANUFACTURED IN ARDMORE, PA.

SERVICED BY FACTORY BRANCHES FROM COAST TO COAST



PROPERTY OF NATIONAL LIBRARIES



U. S. Army Signal Corps Photograph.

POISED FOR ACTION



Our entire facilities have been turned over to the manufacture of heavy duty frames and other products necessary for the promotion of our national war effort.



The crew of this tank buster are ready for any kind of going. Built into the machine they are operating, are the stamina and dependability necessary for the job they have ahead. It can take the stresses and strains of the tough going because it is built on a Parish Pressed Steel Heat-treated frame — the frame with the "spring-back".

Parish Heat-treated Pressed Steel Frames of alloy steel have a fatigue value more than 200% greater than that of non heat-treated frames. That is why Parish Frames can take their beating for from two to five years longer than ordinary frames and the vital parts supported by the frame stay in line.

Keep your fleet rolling without frame troubles . . . keep up your line of defense with PARISH OF READING Heat-treated Frames.



PARISH PRESSED STEEL COMPANY, Reading, Pa.

Subsidiary of SPICER MANUFACTURING CORPORATION

Western Representative: F. Somers Peterson, 57 California St., San Francisco, Cal.

PARISH

PRESSED STEEL HEAT-TREATED FRAMES FOR TRUCKS & TRAILERS

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 68)

than two trucks felt that nothing would happen to them if they failed to send in their reports for the first quarter. These reports were due May 1, a date subsequently extended to May 5. But by May 15 only 20 per cent of the fleets had reported, somewhere in the neighborhood of 80 per cent weren't interested in any kind of a reporting form, simplified or complex. If there was any interest it was among operators of the large fleets who, as usual, were taking the regulatory rap because they had most to lose if ODT should decide to make examples of a few non-complying operators. If ODT insisted upon reports, they wanted a simplified form. These operators might even be casually interested in the fact that one element in ODT was toying with the idea of forcing reporting by tying in a 10 per cent gas allotment penalty for non-compliance. And who would take issue with their skepticism if they asked: Ten per cent of what? Of an over-estimated allotment? Whom would that scare into compliance?

Need for Revised 17 Doubted

There was the issue of a revised ODT No. 17 to reduce the frequency of local retail deliveries to three a week. It had finally reached the desk of Director Eastman and that worthy was reported to be wondering whether conditions hadn't changed to make a revised order unnecessary. Private carriers sponsoring the revision admitted that certain conditions had changed but felt that the manpower shortage and the need to conserve light vehicles for the duration were continuing conditions that argued in favor of the revision. It was a question whether the director would sign it. He well knew the opposition to it of organized labor. If labor refused to play ball the chances were that operators intent upon abiding by the order would find themselves making no deliveries a week instead of the three stipulated. The director could not but remember that where organized labor differed with the means of effecting mileage savings provided in existing ODT orders labor's views seemed to pre-

vail. In view of this record the wonder was that private carriers thought they had anything to gain by a revised 17.

Revocation Procedure Snags

There was the issue of certificate revocation procedure to implement compliance with ODT 21. Procedure had been drawn up and was to be the subject of discussion at a conference of all ODT regional managers in the capital. There were indications that ODT wanted procedure to be extremely simple. It did not have the personnel nor the time for protracted hearings and litigation on a couple million appeals. But there were indications that carriers would oppose anything simple where the future of their businesses was at stake. It was not likely that they would approve a system whereby a local representative of ODT acted as judge, jury, witness and hangman. It was certain they would demand appeal boards on which the public interest would be represented. But if conditions which compelled conservation have changed in most of the states, why should ODT suddenly get strict at a time when a policy of regulatory relief is called for? Another question: Do conditions call for two ODT policies? One for

carriers in states unaffected by the gas shortage and another to enforce conservation in the gas-shortage states?

So much for undecided issues; now for some accomplishments.

Leasing Amendment Ready

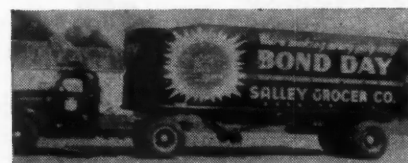
ODT was slated to issue late in May an amendment to Orders 3, 13 and 17 governing the leasing of private trucks. It provides that private carriers can lease among themselves and with for-hire carriers provided they are presently operating as private carriers in the opposite direction to which they lease. Leases must be on a day to day basis and filed with district managers. Thus a private carrier may lease only on one trip of a round-trip operation; on the other trip he must haul his own goods. Compensation rates are not specified. As written the amendment will satisfy the large, organized private carriers who opposed the writing in of leasing compensation, and who contend that compensation should cover only the actual cost of operation because they do not want to be identified with the principle of hauling for a profit. It may not please the smaller private carriers who feel they should share in the profits and have indicated as much to ODT. As matters stand they may still share in the profits if the carrier leasing their equipment is willing to do business that way.

Idle Equipment Headache

The reports of idle equipment made to district offices have been sampled and analyzed by ODT headquarters but may not be made public. The reason: They are too liable to misinterpretation. ODT fears that the figures may be cited without regard to the causes of idleness and lead to the impression that with so much idle equipment there is no need to build new trucks and trailers. There is some significance in the fact that of the vehicles reported 43 per cent were idle for lack of business.

900,000 Appeals Handled

From December to May 900,000 appeals were filed with ODT district offices in connection with Order No. 21. Most of the appeals are said to have been disposed of. But (TURN TO PAGE 72, PLEASE)



Here are examples of truck operator cooperation with the War Bond selling drive. From top to bottom, trucks belong to Briarcliff Laundry, Atlanta, Ga.; Kroger Grocery & Baking Co., Pittsburgh branch, and Salley Grocer Co., of Bernice, La.

WASHINGTON RUNAROUND

(CONTINUED FROM PAGE 71)

no one in Washington knows the nature of the appeals. So procedure for district offices reporting is in preparation.

30,000-Bbl. Black Market

The disposition of excess "T" gasoline ration coupons continue to trouble ODT, and OPA was on its

tail to do something about them. Washington considers these coupons responsible, in part, for the black market in gasoline. Excess coupons in the hands of truck operators total up to a tremendous amount. In one ODT survey covering 36,000 operators it was found that 9800 had excess allotments for the first quarter in the amount of 39,000,000 gal. Many truck operators are turning in their excess coupons but others are not. Some of the latter are disposing of their coupons into black market

channels and in so doing are aggravating, certainly along the East Coast, a gasoline shortage that may yet seriously affect truck operations. OPA estimates that along the East Coast there is a black market of 30,000 barrels (roughly a million and a quarter gallons) daily. Truck operators will be doing themselves a good turn if they will turn in their excess coupons.

Truck Ceilings Draw Gripes

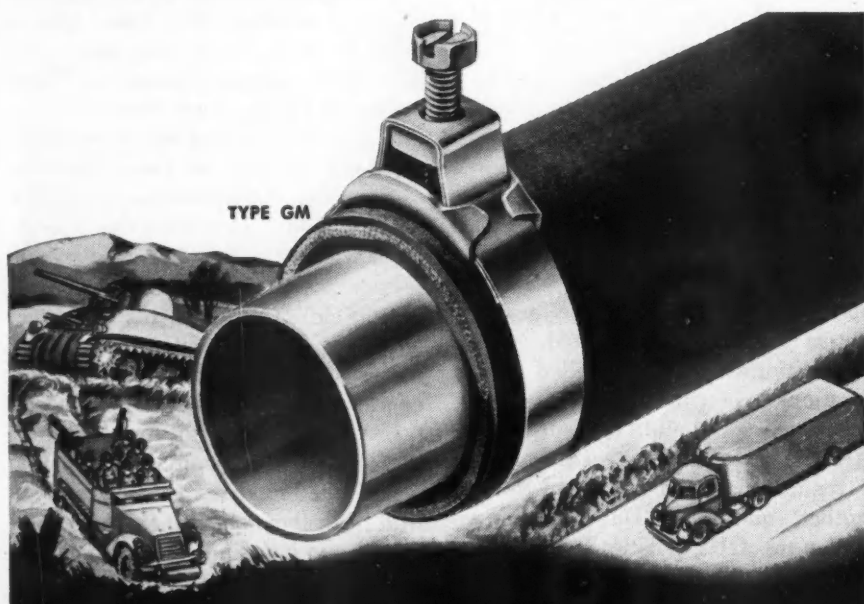
OPA, which doesn't argue that the used-truck price selling regulations are perfect, is receiving complaints from the trade and corrections and improvements may be expected. Early in May one official associated with the regulations forecast that "within 90 days we'll be cutting the vitals out of the used truck ceiling regulations."

Used-Car Ceilings Due

Meanwhile the same division of OPA is working on a used-car price ceiling. Proposed ceilings are based on an average of blue-book prices and meetings with the trade are in progress. Dealers in the East are reported to be satisfied with the ceilings, which are a bit higher than the prices they have been getting. If so, dealers in the mid-west and far west will be opposed to them because they have been buying cars in the East and getting anywhere from \$500 to \$1000 more for them. Dealers everywhere are concerned about the increase in person-to-person sales. They claim their business existence is threatened and may ask for regulation.

END

(Please resume your reading on P. 38)



TYPE GM

DEPEND ON WITTEK

NOC-OUT

HOSE CLAMPS



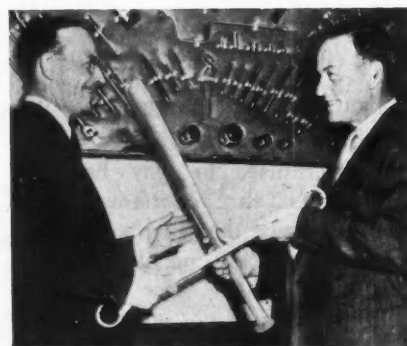
Type A—Adjustable For Replacement.

The standard of the industry. Quick-tightening, perfect leak-proof hose connections, for original equipment and replacement. For Radiator, Heater, Booster Brakes and High Pressure hose connections. Wittek Manufacturing Co., 4305-15 W. 24th Place, Chicago, Ill.



Type HP—For High Pressure Requirements.

WITTEK  **NOC-OUT**
HOSE CLAMPS



"Jigger" Stutz, retiring after 25 yrs. in organized baseball, relinquishes his bat to Freeman Kirwin, sales promotion manager of Plomb Tool Co. as he receives, in return, a tool symbolizing his new connection with Plomb.



We raise a thoughtful question for the automotive dealer or repair shop owner who is now thinking his way through plans for profitable post-war operation.

Will the successful dealer put all his eggs in one basket again?

We don't think so . . . any more than the successful manufacturer dares put his eggs in one basket.

We've worked out the simple arithmetic of increased profits for the man who seeks a broader and sounder scope for his operations. If you're that man, drop us a line.



MACK TRUCKS, INC.

Dealer Department, Empire State Building, New York, N.Y.



Mack

**TRUCKS
FOR EVERY PURPOSE**
ONE TON TO FORTY-FIVE TONS

BUY U. S. WAR BONDS

CCJ NEWSCAST

Mack Moves Executive Offices

The executive offices of Mack Trucks, Inc., were moved as of June 1 from Long Island City to the Empire State Bldg., New York City. Offices will be on the 20th floor.

Walsh U. S. General Sales Manager

D. W. Walsh has been named general sales manager, tire division, of the United States Rubber Co. He has been in charge of tire sales in branch offices all over the country.



Fred O. Burkholder, right, was elected president of Ahlberg Bearing Co., Chicago, to succeed the late C. J. Bender. C. W. Pearsall, left, was elected vice-president. Mr. Burkholder joined the Ahlberg sales force in 1915, was made sales manager in 1926, vice-president in 1928. Mr. Pearsall joined the company in 1919 as a sales representative. In 1937 he was placed in charge of distributors' sales, and, in 1941, appointed general sales manager.



Chicago APEX WORLD'S FINEST FOOT POWER RIVETING MACHINE

Relines brakes—refaces clutches with original factory accuracy. Handles any size job from the smallest to the largest—passenger car, truck, bus, army and airplane brakes using tubular rivets. Truck fleet operators find that this heavy, powerful relining machine does the job better, quicker and with less effort. Delining, drilling, countersinking, riveting, straightening and grinding is accomplished without the operator leaving the machine. Actually, it's a complete relining-refacing department. Every known labor saving feature is incorporated in its design. Write for catalog of the complete "Chicago" line.



**TESTED AND APPROVED FOR
U. S. ARMY AND NAVY USE
QUICK DELIVERY!**

CHECK THIS LIST OF FINER FEATURES.

- ★ **SET BACK DELINER**... Full vision clearance. Motionless, adjustable knockout punch. Built-in old rivet collector.
- ★ **DEEP THROAT**... For easy working.
- ★ **ADJUSTABLE ANVIL**... Quickly set for any length rivet.
- ★ **LOW HEAD**... Specially designed to facilitate work even on small diameter bands.
- ★ **SHOE STRAIGHTENERS**... Built in.
- ★ **DRILLING UNIT**... Two-speed, V-belt drive, no hand pressure required, foot operated.
- ★ **GRINDING UNIT**... Fully machined, large table, 6 1/4" cushioned abrasive drum.
- ★ **CAPACITY**... Up to 1/4" diameter tubular or solid rivets.
- ★ **POWERFUL**... New toggle lever design.
- ★ **QUIET**... No noisy clatter.

Chicago Rivet AND MACHINE CO.
9610 W. JACKSON BLVD., BELLWOOD, ILL.
(Chicago Suburb)

Pennsylvania Truck Weights Lifted

The Pennsylvania State Legislature passed a bill providing for increased truck weights. The bill was sponsored by the Pennsylvania Motor Truck Association, and approval by Governor Martin is expected.

The bill raises gross weight limits as follows: two-axle trucks, from 26,000 to 30,000 lb.; three-axle trucks, from 36,000 lb. to 40,000 lb.; tractor semi-trailers, from 39,000 to 45,000 lb.; single axle limit, from 18,000 to 20,000 lb.

The bill also provides slight increases in license fees in keeping with the increased carrying capacities. It was opposed by the railroad lobby.

North Carolina Weight Upped

The Governor of North Carolina, acting under war emergency powers, has reduced the speed limit to 35 miles and increased the gross weight of vehicles with three or more axles from 40,000 to 42,000 lb. Both orders became effective May 6.

New Hampshire OKays Reciprocity

Under provisions of the motor vehicle reciprocity law passed by the legislature and signed by the Governor on May 6, trucks and buses registered in New Hampshire may now travel the highways of all other New England states and other states along the eastern seacoast with the exception of Maine. Vehicles from all states granting reciprocal privileges may travel New Hampshire highways without the payment of additional taxes.

Goodrich Has Tire Consultant Service for Localized Carriers

An additional conservation program is announced by The B. F. Goodrich Company, embodying most of the features of their Supervised Tire Consultant Service but known as "The Cooperative Tire Conservation Plan."

Aimed primarily for conserving rubber, the plan provides for personalized inspections of every unit in a fleet, an analysis of such information and the submission of formal recommendations which establish controls so necessary for efficient truck

(TURN TO PAGE 76, PLEASE)

MIDLAND

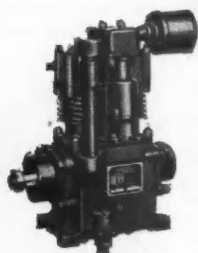
CHRISTENSEN

POWER BRAKES

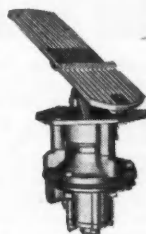


MIDLAND'S 3 EXCLUSIVE FEATURES

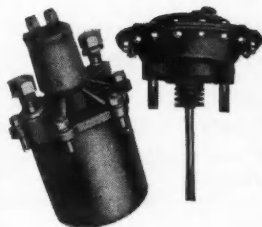
Provide Maximum Safety and Dependability



Big 7.3 cu. ft.
Compressor for
DOUBLE AIR
CAPACITY



Fully compensating
foot control valve for
PERFECT CONTROL



Cylinder or
Diaphragms for
SUPER POWER

Midland Brakes Safeguard Closely Timed Deliveries

War production schedules depend upon every truck load getting thru on time.

With your trucks equipped with Midland Power Brakes you'll be certain that no load fails to get there on schedule because a driver couldn't make an emergency quick stop.

Absolute dependability is engineered into every part in Midland Power Brake equipment. Midland Brakes are quickly and easily installed. They are interchangeable in fleet operation, and they are backed by Midland's "factory rebuilt exchange plan."

With the need for sure, safe operation so vital, ask your distributor about the Midland Brake Surety Plan and Midland Power Brake Kits.



The MIDLAND STEEL PRODUCTS CO.
WEST 106th & MADISON AVENUE • CLEVELAND, OHIO

CCJ QUIZ



by ROBERT F. BAHL

Correct Answer Page 146

Oil is ammunition; our giant flying fortresses and our trucks on the highways both use the same oil. Each of this month's quiz questions touches on some phase of the wartime petroleum situation. Prove that you're up-to-date by scoring at least 70 on these 10 questions, allowing a credit of 10 points for each correct answer. Check page 146 for the answers.

1.

If oil will win the war, it ought to be a push-over for the United Nations. Estimated production for 1942 was —

- a. 6% for the Axis; 94% for the Allies.
- b. 13% for the Axis; 87% for the Allies.
- c. 25% for the Axis; 75% for the Allies.
- d. 33 1/3% for the Axis; 66 2/3% for the Allies.

2.

Here are the names of four men. One of them is chairman of the P.I.W.C.—the Petroleum Industry War Council. Can you pick him out?

- a. Harold L. Ickes
- b. Wm. R. Boyd, Jr.
- c. Ralph K. Davies
- d. W. S. S. Rogers

3.

Those who should know say that all the oil used in America since it was first drilled here in 1859 has totaled about one cubic mile, which translated into gallons is —

- a. 50 million gal.
- b. 1 billion gal.
- c. 35 billion gal.
- d. 1 trillion gal.

4.

Oil pipe lines are quite in the news these days. We wonder if you could tell us what is usually the first thing to come out when the line goes into operation.

- a. Water.
- b. Carbon monoxide.
- c. 100 octane gas.
- d. Rabbits.

Clarke and Miller Join ODT

John L. Rogers, director of the ODT Division of Motor Transport, has announced the appointment of John A. Clarke as Senior Motor Transportation Expediter and Charles E. Miller as Senior Transportation Assistant for the Division of Mo-

5. Another one on wartime pipe lines! The first pipe line was laid in wartime, too, but it was —

- a. The Mexican war.
- b. The Civil War.
- c. The Spanish-American War.
- d. World War I.

6.

Taking the phrase "oil is ammunition" literally, we find that petroleum is now the chief source of the basic ingredient in —

- a. Smokeless powder.
- b. TNT.
- c. Flak.

7.

There's no question about who's "Mr. Big" in the petroleum industry. Largest oil company, by far, is —

- a. Gulf.
- b. Standard Oil of New Jersey.
- c. Socony-Vacuum.
- d. Standard Oil of Indiana.

8.

It isn't any wonder that there's a shortage of oil on the East Coast, when we realize that in pre-war days a tanker left the Gulf ports for the eastern states —

- a. Every 30 minutes.
- b. Every hour.
- c. Every day.
- d. Every week.

9.

One of these gentlemen is prominent as the developer of a process for cracking oil. Take your choice.

- a. Carbon Petroleum Dubbs.
- b. O. U. Wottaschnozzle.
- c. Lemon McKindsey.
- d. Tumpie Bull Bannister.

10.

The outlook for the future oil supply of the world is brightened when the Athabasca deposits are considered. These undeveloped deposits are located in —

- a. Alaska.
- b. Canada.
- c. Antarctica.
- d. Caucasus.

tor Transport, Section of Operations-Property Carriers.

Mr. Clarke has been associated with truck transportation for the past 14 years in Baltimore, Md. Mr. Miller has been associated with the J. E. Miller Transfer and Storage Co., Wheeling, W. Va.

CCJ NEWSCAST

(CONTINUED FROM PAGE 74)

operations. Tire and maintenance costs are reduced and a standard of operations set up for constant guidance.

This new program fills a recognized need for servicing the many localized carriers such as department store fleets, ice and coal, laundries and dry cleaners, bottling companies, local movers, etc.

Designed mainly for fleets of five to fifty units, the service is available for larger fleets provided they are local haulers and do not maintain "over-the-road" schedules.

Field consultants, factory trained manpower with both rubber and equipment experience make the inspections and counsel with operators' personnel on preventive maintenance educational measures.



Appointment of William R. Waddell, left, as manager and Don Switzer, right, as sales manager of the company's Service Division is announced by David W. Rodger, vice-president of Federal-Mogul Corp., Detroit, manufacturers of automotive sleeve bearings and bushings.



M. B. Terry has been appointed to the original equipment division of American Brakeblok Division of American Brake Shoe Co., according to W. A. Blume, president. He will devote his efforts to the production of equipment for military use

Leighton Horne is a member of the executive staff of Edison-Splitdorf Corp., West Orange, N. J., in charge of product planning, plant layout and new construction. He was plant manager of the new RCA (Victor Division) plant in Lancaster, Pa.



Fred L. Hall recently appointed vice-president in charge of sales of the Rogers Diesel and Aircraft Corp., New York, N. Y. He had been sales manager for Bendix - Westinghouse Automotive Air Brake Co. for the past six years.



(TURN TO PAGE 184, PLEASE)



FEDERAL TRUCKS ARE BRINGING HOME *Titanium* THE **BACON** TO HELP BEAT THE AXIS



*Awarded
for Excellence
in War Production*

Titanium—essential element in the manufacture of many war materials including rubber, rayon, paper and those special underwater marine paints which help keep the hulls of America's battle fleets and transports in prime condition—was formerly imported in huge quantities. Reduced to a mere trickle, with no other substitute known, a new source had to be found—and quickly!

Mining engineers and chemists set to work. Tucked away in a remote section of the Adirondacks was an old iron mine, long since abandoned because of an objectionable impurity in the ore. *But that impurity was titanium!*

Today the National Lead Company is mining this strategic mineral in sufficient quantities to meet our Nation's needs. Another brilliant chapter

in America's industrial accomplishment has been written—to speed the victory!

Carrying this refined ore to the nearest railhead over miles of tortuous mountain highways was the task given a fleet of big, husky, heavy duty Federal trucks. Thus one more critical war need is being filled by Federal—another job demanding the utmost in performance, dependability and mechanical resourcefulness is matched with trucks *built to take it*. Again we repeat: "Toss the Tough Jobs to Federal!"

FEDERAL MOTOR TRUCK CO., DETROIT, MICH.



YOU CAN HELP
Keep America Free—With
Your War Bond Investments.

FEDERAL TRUCKS

Since 1910 ... Known in Every Country—Sold on Every Continent

SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 50)

they do not apply to our particular requirements at this time. The glare test is an example. This is very valuable where drivers are engaged in night driving. Our operation is entirely on a daylight schedule.

All tests are made by the police and the results tabulated on an appropriate police form, a copy of

which is given us for file purposes. Average time required for these tests is 20 min.

If our prospective drivers pass the police tests, they go on to the traffic test. If not, and corrections are possible, such as purchasing or changing glasses, these are suggested. Such trainees are then released with instructions to go to the proper place for the correction and that they bring written certification of the correction as soon as completed. If any prospective driver is disqualified in

the test, this in no way affects his license to drive vehicles for any other company or his own car.

Traffic Test

The next big hurdle is our traffic test. This is an 8½-mile course through city and suburban streets duplicating every possible kind of road condition found on our routes. The test is begun simply by telling the trainee that he and the instructor are going out on a traffic test to see if he can handle one of our type trucks. He is told that he will be checked and scored as to how carefully and smoothly he operates the vehicle, as well as to his observance of all legal conditions.

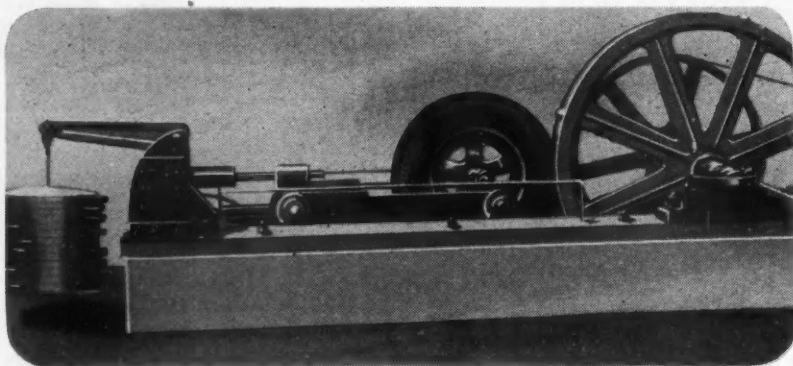
The object of the traffic test is not only to discover what the trainee knows or does not know about our type of trucks, but to uncover bad driving faults which may lead to accidents or abuse of equipment. Therefore, in the preparation of this test, a list was made of every possible improper driving condition or situation which could occur on the prescribed test route. Our compilation amounted to 68 different items.

Our basis of scoring was arrived at by checking our accident reports to determine which driving faults figured most prominently and most frequently in our accident experience. We arranged these in five groups, according to seriousness, and coded each of the 68 driving conditions accordingly. Thus, in the final breakdown, our traffic test aims to determine if the driver has any of the faults that lead to accidents.

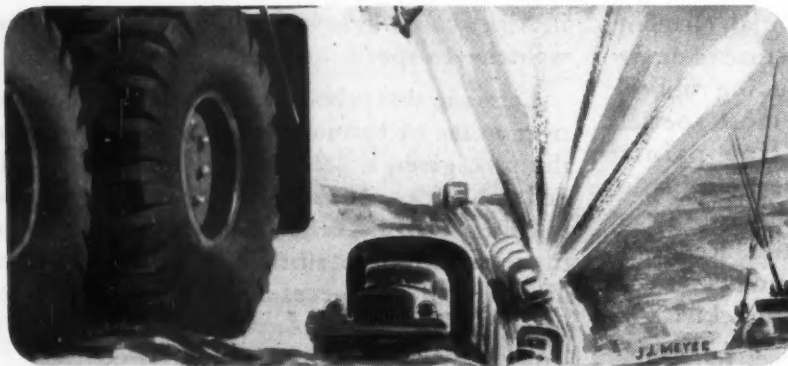
A list of the 68 items will be found in Table I. The consecutive numbering has no significance. Similarly, there is no special reason why some of the points are phrased negatively while others positively. Our driver instructor understands exactly what is meant in each case. The numbers in parentheses are the code numbers—weight numbers, we call them—and are part of our scoring process. The most serious fault is rated at five demerits, while the least is rated at one demerit.

Appended to the 68 items of operation in Table I, there is an alphabetical list of 11 items to be checked by the driver before taking the vehicle out on the road. The trainees are made acquainted with this list,
(TURN TO PAGE 80, PLEASE)

TESTED *in laboratory*



PROVED *on battlefield*



Tires tough enough for war are more than a match for today's demands on commercial freight trucks. That's why Cooper truck tires, strength-tested in laboratory and proved on battlefield, can give your fleet performance—plus—longer mileage, fewer tire troubles, bigger value! Look up your Cooper dealer today. The Cooper Corporation, Findlay, Ohio.

Cooper

TRUCK TIRES





Who can
afford an
ailing engine
these war days?

Engineering is as vital in overhaul work as in engine manufacture!

No reason in the world why the benefits of engineering should stop abruptly at the factory door! Certainly it's just as important—even more so today—that your painstaking overhaul work be precisely engineered as for the engine to be well designed in the first place!

Every ring in every Sealed Power set is selected because it is particularly designed to work with the other rings in the set in that particular engine. Perhaps it has extra tension, or less tension; perhaps it has a taper particularly effective in that engine; or it may have no taper at all. Some Sealed Power sets include drastic oil rings. Some do

not. In each case, experience has shown Sealed Power engineers which is best for that particular engine, which is best for re-ring jobs, which for re-bore jobs.

Good mechanics shouldn't and needn't be handicapped with haphazard guessing about which rings to use on a job. Even the stars among factory precision-mechanics would not think of working without their blueprints . . . *engineers'* blueprints. Your service shop deserves the same sure guidance—and gets it with Sealed Power *Individually Engineered* Piston Ring Sets. Sealed Power Corporation, Muskegon, Michigan, and Windsor, Ontario.

For Victory, Sealed Power Piston Rings, Pistons and Cylinder Sleeves by millions are pouring into America's war production lines—into trucks, tanks, jeeps, airplane and marine engines.



AN INDIVIDUALLY ENGINEERED SET FOR
EACH POPULAR MAKE OF CAR OR TRUCK

Scrap metal is needed for every gun,
tank and ship. Send your scrap to war.

SEALED POWER PISTON RING SETS INDIVIDUALLY ENGINEERED

SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 78)

and our method of checking each item, before taking the traffic test.

There is nothing difficult about the test itself. As a matter of fact, we try to put the driver at ease as soon as possible to uncover his habitual driving form. At best, the presence of the instructor creates a certain amount of nervous tension. The

driver is making every effort to remember all the proper things to do. He will endeavor to do them whether it is habitual or not. After the first four or five miles, however, habit and the disarming manner of our instructor, will get the best of almost every driver and faults will start to show up. We find this is true, especially since our test is so arranged that all operations must be repeated a number of times.

While conducting the test, the driver instructor has before him test

check sheets which not only state the route to be taken but list all operations required to make the trip. The traffic test check covers seven 8½ x 11-in. mimeographed sheets. An idea as to how the test check is arranged, the operations to be checked and the procedure employed can be obtained from the following data reprinted from several test check sheets.

TRAFFIC TEST CHECK SHEET

1. TRUCK INSPECTION—19 points

- | | |
|------------------------------|---------------------------|
| (2) A—Gas | (2) G—Brakes |
| (2) B—Oil | (2) H—Tires |
| (2) C—Water | (1) I—Gear shift position |
| (2) D—Horn | (1) J—Windshield Wiper |
| (2) E—Lights | (1) K—License tags |
| (2) F—Signals (if installed) | |

2. CHECKING DRIVER—7 points

- (2) 25—Enters from curb side
- (1) 10—Closes doors securely
- (2) 2—Adjusts rear vision mirrors
- (1) 3—Opens windows for ventilation
- (1) 5—Assumes alert driving position

3. STARTING ENGINE—8 points

- (1) 11—Depresses clutch pedal
- (1) 9—Checks gears for neutral position
- (1) 56—Turns ignition switch
- (1) 53—Pushes starting pedal or button correctly
- (1) 59—Releases starter as soon as engine operates on own power
- (3) 4—Allows motor to warm up

4. STARTS TEST—11 points

- (1) 11—Depresses clutch pedal
- (1) 52—Places gears in low
- (2) 47—Checks traffic through rear vision mirror or window
- (1) 58—Releases hand brake
- (2) 41—Keeps eyes on road
- (1) 1—Uses proper pressure on accelerator
- (1) 57—Releases clutch properly—smooth start
- (2) 18—Stalls engine

5. PROCEEDS, West on Merion Avenue to 50th St.—15 points

- (1) 27—Changes into 2nd gear
- (1) 64—Selects correct gear
- (1) 65—Maintains correct speed
- (5) 48—Obeys traffic signs
- (2) 33—Checks traffic
- (2) 32—Gives proper turn signal at proper time
- (2) 28—Gets into proper lane for left turn

6. LEFT TURN on 50th St. to Lancaster Ave.—18 points

- (1) 65—Maintains correct speed
- (2) 12—Cuts corner
- (1) 14—Cuts corner too wide
- (2) 24—Moves into proper lane after turn
- (2) 32—Gives proper turn signal at proper time
- (3) 29—Gets into proper lane for right turn
- (2) 33—Checks traffic
- (5) 44—Exercises proper caution at intersection

Our method and objective should become apparent at this point. Even though the test has just begun, the driver has been obliged to inspect his vehicle to determine if it is in proper condition for use. He has had to start the engine, drive it out of the testing field into traffic and travel about two blocks. During this time it was necessary for him to operate the various controls a number of times. He has had to check traffic conditions, make certain turns, sig-

(TURN TO PAGE 82, PLEASE)



KEEP 'EM ROLLING

with

BLOOD BROTHERS UNIVERSAL JOINTS

Whatever your requirements, if your problem is to transmit power at an angle, our field and factory experience of more than 30 years is at your command. Our Engineering Department will gladly submit quotations covering your requirements.

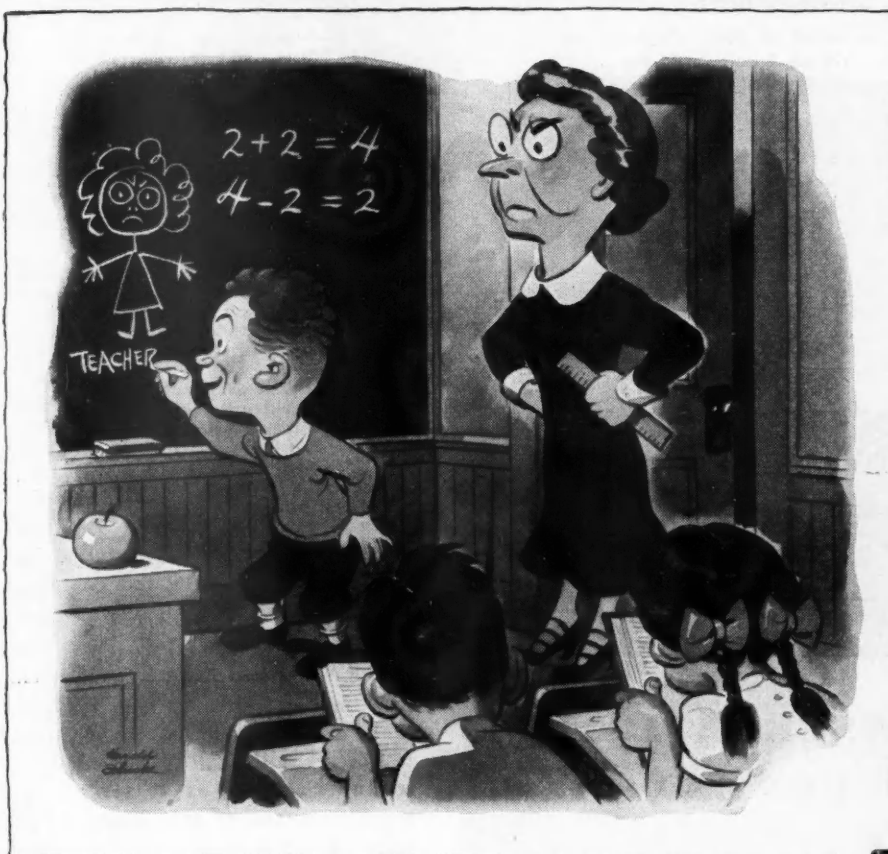
BLOOD BROTHERS MACHINE COMPANY
Division of Standard Steel Spring Company
ALLEGAN, MICHIGAN

Backed by
over 30 years'
Factory and Field
Experience

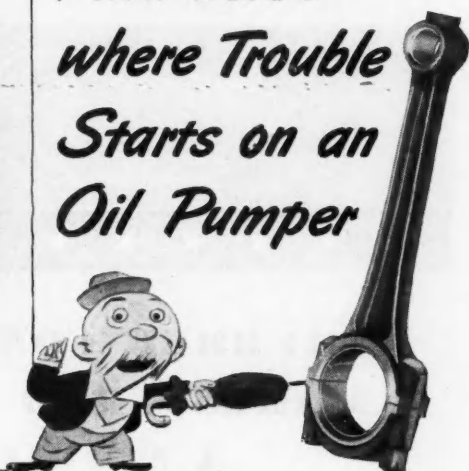


SPECIFY
Blood Brothers
UNIVERSAL JOINTS
FOR RELIABILITY AND
ENGINEERING EXCELLENCE

Here's Where the Trouble Starts!



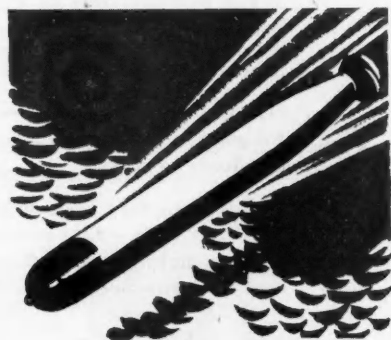
*And here's
where Trouble
Starts on an
Oil Pumper*



THIS JOB IS YOUR WAR SERVICE

PROMPT replacement of worn engine bearings prevents more serious engine and crankshaft damage later. Worn bearings let excess oil flood combustion chambers. It burns to carbon on rings, pistons, plugs and valves. This total, daily, national waste of vital gas, oil and metal parts is needless dissipation of precious war supplies.

Yet essential transportation must keep rolling to keep war industries going. It calls for *skilled* men to overhaul engines for lasting performance and economy. That's your essential war job. *Your skill and experience can't be replaced by just any pair of hands!* Our job is to do all we can to keep you supplied with service bearings. Let's both stay on the job to help our country.



FOR VICTORY

Federal-Mogul's increased factory production is working "all out" producing vital precision parts for torpedoes, bearings and precision parts for planes, tanks, guns, boats—and millions of bearings to service the cars carrying war workers and materials to their jobs. We "keep 'em rolling"!

FEDERAL-MOGUL SERVICE • DETROIT, MICHIGAN
DIVISION OF FEDERAL-MOGUL CORPORATION

WORN ENGINE BEARINGS CAUSE OIL PUMPING



SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 80)

nals, etc. All these operations have been observed by the instructor and the errors noted.

It takes 29 steps to run through the entire course. Inasmuch as there is so much repetition, for reasons previously outlined, no attempt will be made here to reprint all steps. The above steps show how the test starts

and the next few will show how certain other conditions are handled to determine driving ability.

9. PARKS ON DOWN GRADE—19 points

- (2) 20—Gives signal to stop
- (2) 49—Pulls into proper position at curb
- (2) 50—Cuts front wheels to curb
- (5) 55—Applies hand brake
- (5) 7—Stops truck smoothly
- (1) 68—Turns off ignition switch
- (2) 51—Puts gears in reverse

10. STARTING ENGINE—9 points

- (1) 9—Checks gears for neutral position
- (1) 56—Turns on ignition switch
- (1) 53—Pushes starter pedal or button correctly
- (1) 59—Releases starter when engine operates on power
- (2) 47—Observes traffic in rear mirror

- (1) 64—Selects correct gear
- (2) 67—Eases front wheel back away from curb

12. PARKS ON UP GRADE—21 points

- (2) 20—Observes traffic and gives stop signal
- (2) 49—Pulls into proper position at curb
- (5) 7—Stops truck smoothly
- (2) 50—Cuts wheels to curb
- (5) 55—Applies hand brake
- (1) 68—Turns off ignition switch
- (1) 52—Puts gears in low
- (1) 61—Rolls back on hill
- (2) 62—Stalls on hill

13. STARTING ENGINE—23 points

- (1) 9—Checks gears for neutral position
- (1) 56—Turns on ignition switch
- (1) 53—Pushes starter pedal or button correctly
- (1) 59—Releases starter when engine operates on own power
- (2) 47—Observes traffic in rear mirror
- (1) 64—Selects correct gear
- (1) 58—Releases brake
- (1) 57—Releases clutch smoothly
- (1) 65—Uses correct speed
- (1) 1—Uses proper pressure on accelerator
- (5) 44—Exercises caution at intersections
- (3) 28—Moves into proper lane for turn
- (2) 32—Gives proper signal at proper time
- (2) 33—Checks traffic

Half way around the course, the instructor stops the test to point out all errors, giving the driver a chance to correct them on the return lap.

Upon return to the training field, the instructor transfers all checks made on the Traffic Test Check Sheets to the Traffic Test Score Sheet, shown in Table II. This is merely a single page summary of the results of the test. All operation errors and failures are indicated by underscoring the respective operation numbers in each step.

Scoring is a negative process; perfect score is zero, while complete failure adds up to 547 points. A working example of this process can be obtained by referring to step No. 13. Here the inspector checks on 14 operations. If the driver fails to check gears for neutral position before turning the ignition switch and depressing the starter, when commencing step No. 13, that omission is checked on the test check sheet and costs the trainee one point, as shown in the parentheses. Next, if he should depress the starter before turning the ignition switch, that, too, costs him one point. And so on. All the operations total —23 points. Now, if the above omissions should be the only ones made by this driver for this step, his scoring would be —2 points.

We consider —25 as a passing mark for the traffic test. Seldom does a trainee score that low on his first run. Therefore, since this is a training course, rather than an elimination process, as the police test is, our instructor proceeds to point out all the mistakes made, then explains or,

(TURN TO PAGE 85, PLEASE)



RUBBER CONSERVATION MAKES GOOD GOVERNORS A "MUST"

It is a patriotic duty as well as a demand by the government that rubber be conserved.

A good Governor is a powerful factor in conserving rubber.

Handy Governors have been making records in tire conservation for many years—up to 23 per cent saving in tire maintenance in hundreds of fleets.

In addition, they save up to 15 per cent on fuel—26 per cent on lubricant costs—32 per cent on engine repair—26 per cent on general maintenance—30 per cent on brake maintenance—16 per cent on insurance—37 per cent on accident cost.



KING-SEELEY CORPORATION • Ann Arbor, Michigan

HANDY *Visible Action* GOVERNOR

World's Largest Manufacturers of Automotive Governors



THE RING THAT TAUGHT FLEETS

How to save oil

Fortunately the fleets of this country had learned to prolong the life of their engines, long before war came — by installing Hastings Steel-Vent oil rings.

Steel-Vent's wear-saving is even more important now. Also its ability to save oil and restore fuel economy. These are doubly vital factors in wartime.

You want the best. You can't afford to take chances. So, whether it's a re-ring, a rebore, or a re-sleeve job, use Hastings Steel-Vent Motor Engineered sets.

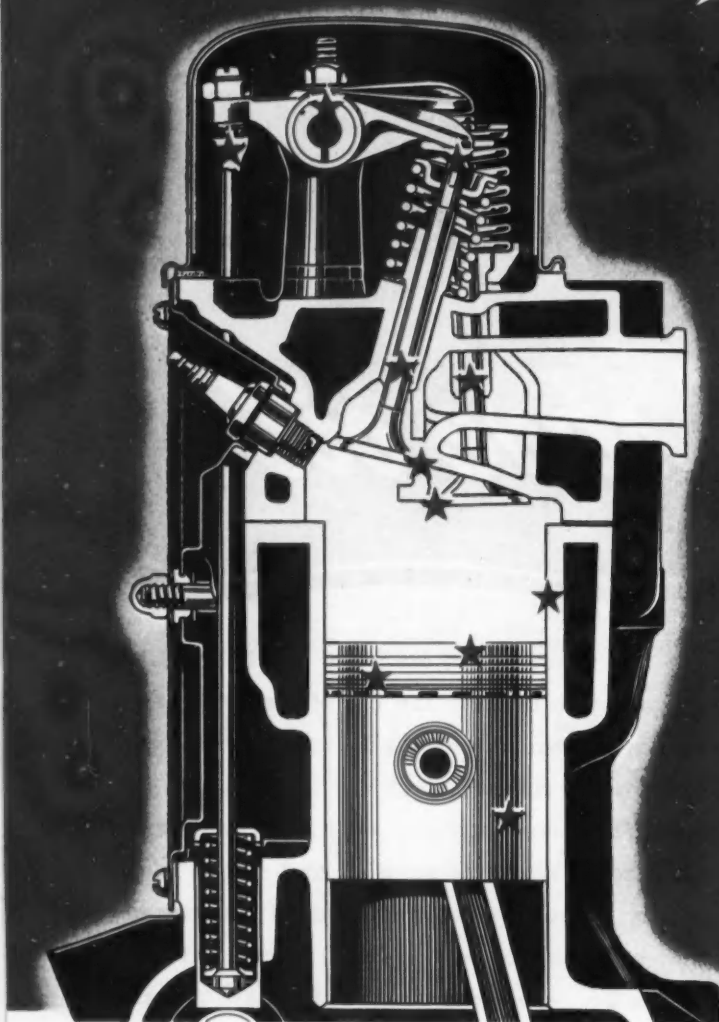
HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN
Hastings Mfg. of Canada, Ltd., Toronto

**HASTINGS**
STEEL-VENT PISTON RINGS



TOUGH on oil-pumping • **GENTLE** on cylinder walls

FOR BETTER PERFORMANCE AND LONGER MOTOR LIFE



*Keep these key
points clean
-and lubricated*

★ Fleet operators everywhere have learned from experience that careful attention to these upper cylinder areas pays dividends. They will tell you that Casite makes motors perform better, keeps them trouble-free for longer periods.

★ Casite protects these and other important points. It cleans out sludge, retards the formation of engine varnish, releases sticking valves and rings. And, as an oil carrier, Casite plays

an important part in reducing friction and wear. It helps oil reach hard-to-lubricate, close-tolerance parts. Start using Casite today and keep it in every motor—all the time.

THE CASITE CORPORATION
HASTINGS, MICHIGAN

CASITE

CLEANS OUT MOTORS
KEEPS MOTORS CLEAN



SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 82)

if need be, demonstrates the correct procedure.

As many tests are conducted as the instructor feels necessary. We find that only two, or at most three, runs are needed for the average experienced driver. Trainees unable to drive require two or three days before passing; seldom more than that, although we have set one week as a maximum limit in which any person should become a proficient driver of one of our trucks.

Skill Driving Test

While the Police Clinic Test and the Traffic Test have done much to insure the employment and training of good drivers, we go another big step further. Every trainee must pass our Skill Driving Test. The object of this test is to produce above average drivers—to develop the driving skill of our men and women to such a degree that, not only will they have excellent safety records, but that they reduce to the very minimum even the minor body scratches, tire scuffs, fuel consumption, running time and the many other seemingly small items that reduce efficiency and increase operation and maintenance costs.

The traffic test requires parking of the vehicle, for example, but not within the narrow limits required in the skill test. By referring to Table III it will be seen that there are 16 different steps to this test. Each step is designed to simulate an actual operating condition on the route—turning, backing, passing and parking. Even the weaving test, backward and forward, is designed to determine if the driver has sufficient skill to avoid collision with vehicles suddenly darting out from left or right, or both; moving in between and around other trucks backed up to curbs while unloading; avoiding children on bicycles, etc.

The test field measures 150 x 200 ft., giving us ample room to handle any type vehicle. Movable stanchions mark off the areas allowed for each test to certain established rules which are clearly stated in Table III, under each of the respective headings. While we conduct the test as though it were a game, to reduce nervous ten-

sion and get a true picture of ability under actual working conditions, it is the most serious and important part of the entire program.

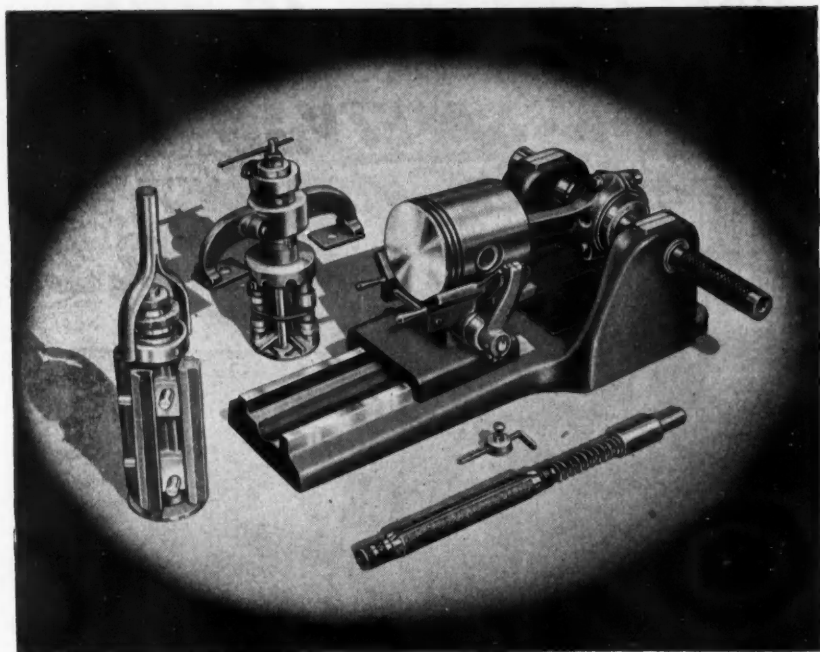
The results demonstrate conclusively whether the trainee will turn out to be a fender smasher, or worse and whether his driving skill will enable him to avoid or minimize damage when collision is imminent, even when not his fault. Moreover, with equipment and manpower shortages as they are, we have reasonable assurance that both the man and the

truck will stay in active service for a much longer period than probable without the driver training program, as our old records will substantiate.

Inasmuch as the data outlined in Table III tell the entire story, it will not be necessary to dwell upon the details.

Every trainee must take the test. He is allowed three failures. He is permitted to practice as much as he feels is necessary until he feels he can qualify. To that extent the driver's

(TURN TO PAGE 86, PLEASE)



Lisle TOOLS

QUALITY

To Help You "Keep 'em Rolling"!

RIDGE REAMER

Removes the top cylinder ridge in one minute per cylinder. Exclusive, patented lathe action assures fast, accurate work.

PIN HOLE HONE

A fast, accurate hone at an attractive price. Can be used wet or dry. Grinds all metals. Handles all sizes from .730 to 17/16".

ROD ALIGNER

The Lisle will straighten twisted, bent rods in 90 seconds. Just one easy operation without removing the rod from aligner.

CYLINDER HONE

Designed for both partial and complete honing jobs. Longer stones assure more accuracy. Six exclusive features.

LISLE CORPORATION, Clarinda, Iowa

LISLE CORPORATION,
Box 1017, Clarinda, Iowa

Mail This Coupon

Send us free literature and complete details on the Lisle Tools checked below.

() Ridge Reamer () Pin Hole Hone () Cylinder Hone () Rod Aligner

Name

Address

SCIENTIFIC DRIVER TRAINING

(CONTINUED FROM PAGE 85)

judgment as to his ability and knowledge of vehicle control also is an index of his physical and mental coordination. Thus, if he thinks he is able to judge front clearance properly, as required in step 16, but repeatedly fails, his judgment in gauging the truck's ability to pass between two parked or, worse, two moving

vehicles in a narrow street also is likely to be false. After three failures, embracing the exercise of judgment coupled with ample coaching and practice, we feel it is not unfair to assume that similar judgment and traffic decisions are liable to be erroneous on the road—with far more serious consequences than erroneous judgment in the matter of weather or the sales possibilities of buttermilk.

As we freely admitted that the traffic test was not difficult, we admit with equal frankness that the skill

test is really tough. The course, tests and rules are the same as used for our "Golden Wheel" driving contests in which the most skilled drivers from all classes of fleets in the East compete annually for driving skill honors. Any driver who has covered the course will attest to the fact that the tolerance limits are very small. For parallel parking, for example, the driver has only 15 in. over the turning radius of his vehicle to get into and out of the space in one try, and with the front and rear wheels not more than 6 in. (a total of 12 in. for both wheels) from the curb when finally parked. Try it yourself sometime.

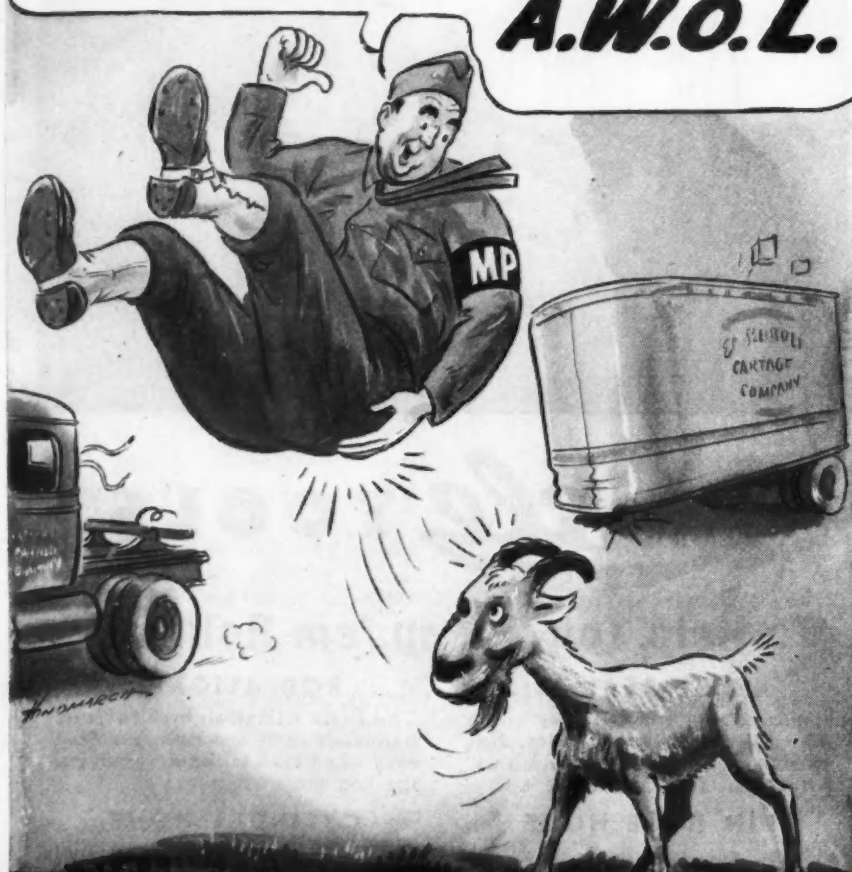
Our records show that many trainees have failed to pass the skill tests, even after repeated trials. They were denied employment, because our experiments have shown that if the driver can't make the grade in three trials, the overwhelming odds are that he, or she, never will succeed. We make this statement so positively because after the first failure the instructor coaches the trainee in the particular difficulties that he experienced in the first trial. The same coaching and training is given after the second and third failures. Failure cannot be ascribed to nervousness, because the trainee is permitted to take subsequent tests when ready, even a day or two after the first test.

Tests are conducted regardless whether it rains, sleets or the sun shines because our products must be delivered in all kinds of weather.

Scoring, as for the traffic test, is negative. The passing grade is —50 demerits. It will be noticed in Table III that the first part of the skill test is similar to the traffic test in that a vehicle check is required. We attach great importance to this because it not only prevents trouble on the road, but it teaches the driver to take good care of his truck. This, in our opinion, is the very foundation of truck conservation.

Scoring for the vehicle check is the same as in the traffic test. Scoring on the six motor vehicle code questions is one demerit for each wrong answer. In this step we avoid the schoolmar'm and police questioning techniques by allowing the driver to pick his own questions. Numbered slips—one for each regulation of the motor vehicle code of the state in
(TURN TO PAGE 88, PLEASE)

**VIKE-I GET IT! IF THE
TRACTOR WAS EQUIPPED WITH
AN A-S-F SAFETY 5th WHEEL,
THAT TRAILER WOULDN'T BE
A.W.O.L.**



**A-S-F-FIFTH
WHEEL**

**AMERICAN STEEL FOUNDRIES,
Indiana Harbor Works...East Chicago, Indiana**

ON-THE-BUTTON TEAMWORK!

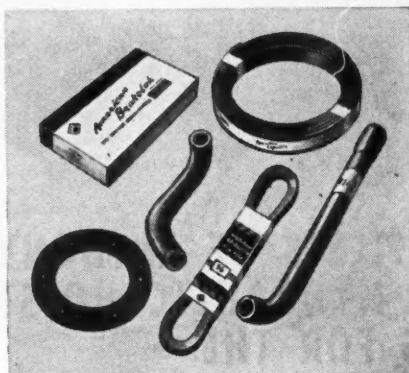


1 Firing a 3-inch anti-aircraft gun calls for split-second timing and teamwork.

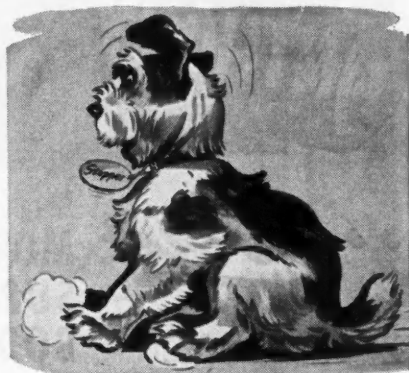
Photo by U. S. Army Signal Corps



2 American Brakeblok teams up with you for fast action. National advertising sells American Brakeblok Brake Lining. When you recommend it, your customers accept this lining quickly and you're on the job with no time lost in explaining an unfamiliar lining.



3 American Brakeblok offers you brake lining in rolls, car sets, axle groups and segments, and a comprehensive line of fan belts, straight and formed radiator hose, woven and molded clutch facings. It's always safe to say, "Make it American Brakeblok!"



4 Stopper the Pup is American Brakeblok's whimsical, friendly ambassador to the American motoring public. Appearing every month in national magazines, he sells safe brakes and American Brakeblok Brake Lining to readers everywhere.

American Brakeblok Division, Detroit, Michigan



American Brakeblok products are quickly available through 37 NAPA warehouses and through jobbers in every trading center.

AMERICAN

Brake Shoe

COMPANY

American Brakeblok

BRAKE LINING

(CONTINUED FROM PAGE 86)

which the driver is to operate—are placed in a hat and the trainee selects six. No advance study is provided. We assume that, being a licensed driver, he should be familiar with all regulations.

Route Checking

When a driver who has passed our tests is given a vehicle and introduced to the customers on his route, we are notified. After a day or two elapses,

some member of this department drives into the territory and checks him. The check may take a few hours, a half day or longer, until we are satisfied that the vehicle is properly handled. Should something wrong be discovered, steps are taken to correct it.

Program is Continuous

Like all worth while endeavors, our driver training program is maintained continuously so that it will not

lose its effectiveness. It would not be worth the time, effort or money to put new drivers through the tests and then forget them. For example, if reports come in that a certain driver has had several body or fender scratches, or had an accident, he is ordered to report to us immediately. Here we try to determine by direct or indirect questioning what the reasons were and whether the driver is slipping. He may be cajoled or ordered, depending upon his attitude, into taking the principal three tests all over again. If something is uncovered that we can prove is a contributing factor, we immediately take what measures may be necessary for correction. Seldom do we fail to get such a driver back to top form.

We keep interest and pride in driving skill constantly alive in various ways. The most important is our annual driver contest which is open to all men in all branches who have had no accidents during the preceding year. The attractive trophy and individual prizes are hotly contested. Awards are made at a company dinner and a good time is assured all contestants.

END

(Please resume your reading on P. 51)

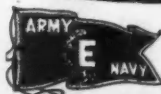


...Now MORE FLEETS OF ANTHONY SUPER HYDRAULIC HOIST BODIES FOR THE —

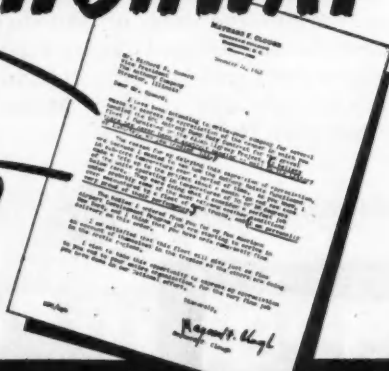
ALASKAN HIGHWAY

I believe there has never been a contract handled as well in the history of industry, as you handled this.

I am personally very proud of their performance.



Anthony's Army-Navy "E" is the FIRST such award to any company in the hoist and body field.



ANTHONY COMPANY, Inc.
STREATOR ILLINOIS



Two of United States Rubber Co.'s monthly series of humorous posters currently being distributed to fleet garages and emphasizing tire conservation as part of 1943 U. S. transportation maintenance program



MACHINE GUNS—built by AC since nine months before Pearl Harbor. (Mounted in Martin bomber.)



AUTOMOTIVE SPARK PLUGS built by AC since 1908.

YOU REMEMBER, "Suzy-Q"—famous Flying Fortress that destroyed every Zero attacking from the rear. She was one of the first with .50 caliber tail "stingers"—like those AC has been building, continuously, since nine months before Pearl Harbor.

Aerial gunners know that the shattering blast of those machine guns must be "on tap" all the time. So, those guns are cleaned, oiled, and adjusted after every trip aloft. Marvels of precision workmanship, and as reliable as that workmanship can make them, the guns, nevertheless need service to keep them in fighting trim.

Expert Care for Your Spark Plugs
The same thing is true of the AC Spark Plugs which fire the engine of your car, truck, or tractor. Symbols of quality and performance to millions of motor-

ists, these plugs need cleaning and adjusting every few months.

This service is easy to get. Every mechanic—everywhere—renders valuable conservation service. This is being augmented, now, by trained AC service men who are carrying to all service organizations the latest methods of diagnosis and repair of AC products. (The panel below indicates what this service is, and why you need it.) We urge you to follow the simple suggestions—

for the conservation of your vehicle, and to save gasoline, oil, and tires.

When replacement is needed, select AC—and be sure of complete satisfaction.

Awarded to the men and women of AC on September 2, 1942, for outstanding achievement in producing for Victory.

AC SPARK PLUG DIVISION
GENERAL MOTORS CORPORATION



SPARK PLUGS—Dirty or worn plugs waste as much gas as one coupon in ten. Oxide coating collects on the plugs and causes them to misfire, especially when the engine is working hard. Dirty plugs also cause hard starting which weakens your battery. Under present slow driving conditions, have your plugs cleaned and adjusted every few months.

AIR CLEANERS—A dirty air cleaner increases gasoline consumption because it chokes down the flow of air into the carburetor. Your air cleaner should be rinsed whenever your car is lubricated.

FUEL PUMPS—Practically trouble free. But, if yours has been in use thirty or forty thousand

miles, it may be worn to the point where a check-up is due.



DRIVING INSTRUMENTS—Speedometer, gasoline gauge, oil pressure gauge, ammeter, and temperature gauge seldom need service. But, if they give trouble, have them cared for at once.



OIL FILTERS—Slow driving accelerates the formation of soot and carbon in engine oil. If not constantly filtered from the oil, this dirt will clog piston rings, which causes increased consumption of oil and gas. So, replace your oil filter element whenever your dealer's AC Oil Test Pad shows that your oil is dirty.

BRING VICTORY QUICKER—BUY U. S. WAR SAVINGS STAMPS AND BONDS

Conserve gasoline, oil, diesel fuel, and tires by keeping your AC Spark Plugs, Oil Filters, Air Cleaners, Fuel Pumps, and other products in peak condition. When replacement becomes necessary, select AC—and be sure of complete satisfaction. AC quality and precision production, accepted by the Army and in service on every front, assure maximum reliability and economy.

Reproduction of current advertisement appearing in leading national and farm publications.

SERVICING A SCATTERED FLEET

(CONTINUED FROM PAGE 53)

ard only because we have adopted the plan of having mechanics specialize on particular units of a vehicle. We have one man who does all work on valves, pistons and bearings; another does all work on electrical units, fuel pumps and carburetors; another man takes care of all work on transmissions, differentials and steering

gears. Three mechanics specialize on engine overhaul. By specialization the men have become experts in their line, with the result that they turn out better jobs in less time.

Of course, no matter how good a mechanic is, he cannot perform accurate and fast work without proper equipment. Therefore, it always has been our policy to have every piece of shop equipment necessary for fast and accurate work.

Following is a list of our most important shop equipment: 2 lathes,

shaper, arbor press, drill presses, piston grinder and lathe, buffing machine, wrist-pin bushing reamer, valve grinding machine, line boring bar for main bearings, boring bar for rod bearings, clutch rebuilding machine, electrical test equipment, gas analyzer, brake relining machine, degreasing tank for the cleaning of parts, portable greasing machine for lubrication jobs and all the necessary smaller tools and equipment.

As explained previously, all overhaul work is performed in the Newark shop. Whenever a branch shop decides, after a thorough check and inspection, that a certain truck requires an overhaul, it is then sent to Newark for the job. Excessive oil consumption is the factor that determines when an overhaul job is required; generally when the oil consumption drops to less than 100 miles to a quart. We average about 40,000 miles per vehicle before an overhaul is necessary; this is generally about every two years.

Overhaul Procedure

When a truck arrives at the main shop for an overhaul job, the first thing we do is mike the cylinders. If they are not more than .003 in. out of round, and not over .009 in. taper, we install a set of expander rings. However, if these limits are exceeded, then the job is rebored and new pistons fitted. Generally we do not find it necessary to rebores an engine until it has about 65,000 miles of service.

After we have determined whether to re-ring or rebores, the truck is placed on the line for the overhaul work to start. The first thing we do is to remove all units such as the transmission, carburetor, fuel pump, distributor, steering gear, water pump, brake shoes, etc. These units are then tagged with the number of the truck from which they were removed and sent to the cleaning department. Here, one man disassembles the units and thoroughly cleans them in a large degreasing tank. The cleaned units and parts are then sent to the unit repair department for inspection and any necessary repairs.

The electrical specialist overhauls distributors, generators, starters, fuel pumps and carburetors. He also checks all wiring, lights, switches, etc., and makes any needed repairs. The engine specialist removes the carbon and grinds the valves; checks

(TURN TO PAGE 94, PLEASE)

THIS SIMPLE 3-POINT PLAN *Helps BEARINGS Stay Young!*

HERE'S the quickest, most practical, lowest cost way for Auto and Truck Service Men to build good will among their customers: the famous **Ahlberg 3-Point Plan for Keeping Ball and Roller Bearings Young.**

- 1. POWER WASHING**—not a casual "dunking" in a solvent, but a thorough cleansing that removes every trace of old lubricant and dirt.
- 2. PRESSURE AIR DRYING**—makes certain that every part is perfectly clean—and dry.
- 3. PRESSURE PACKED** with Clean Grease—fresh lubricant forced into every part of the bearing.

Your Ahlberg jobber can supply this modern Croft equipment that is saving time, labor and money for thousands of wide-awake service shops. Don't fail to find out about this practical plan.

SAVE WORN BEARINGS
Every worn bearing is the finest raw material for a reconditioned bearing. Whenever a bearing needs replacement, have it re-ground the Ahlberg way. Ahlberg Ground Bearings are carefully re-conditioned to new bearing standards and are guaranteed to give "new bearing" performance. For more than 35 years many big fleets have been using them as standard replacement bearings. Write Ahlberg for the new AGB Book of particulars.

1
2
3

AHLBERG

BEARING COMPANY

Manufacturers of (CJB) Master Roll Bearings

★ 3006 WEST 47th STREET • CHICAGO, ILL. ★

Out West use PRECISION BEARINGS, INC. Los Angeles

Lighting the Way for Wartime Transportation

GUIDE SEALED BEAM UNITS

Along nighttime highways, Guide Sealed Beam headlamp units on trucks and buses are laying down a "carpet of light" to safeguard wartime transportation.

These Guide units are sturdy, permanently focused, and built to comply with all safety regulations. They represent many developments and refinements that have resulted from Guide's long experience as a manufacturer of automotive lighting for all types of vehicles.

Maintenance men have learned to depend on Guide for the best in lighting. Guide Sealed Beam units are worthy of this trust.



Guide products and service parts are sold through independent United Motors distributors served by 20 conveniently located United Motors Service branch warehouses.

Guide
LAMP
Division of General Motors Corporation
Anderson, Indiana

BUILDER OF AUTOMOTIVE LIGHTING EQUIPMENT

Frank Answers to Frank Questions Truckers are Asking...



What is the "U. S." Transportation Maintenance Plan?

An agreement between a truck operator, whether of one truck or a fleet, and a "U.S." Truck Tire Distributor which provides for a complete analysis of conditions affecting tire wear and a complete report on the condition of every tire. Recommendations for change, repair, recapping or replacement are made *in writing* to the truck owner. Official Tire Inspections as required by O.D.T. and advice on needed records and forms are also included.



Why do I need this Plan?

The only way you can comply with Federal regulations and insure proper tire care is to set up a definite system including a schedule of inspection for every truck and every tire. If you operate a fleet of trucks, you need the program to make sure you keep them all rolling *all* the time. If you operate only one truck, you need the program because that one truck represents your stock-in-trade. You can't afford to have it laid up one unnecessary minute!



Has the Plan worked out for others?

The Plan combines the experience of fleet operators, "U.S." Tire Engineers and "U.S." Truck Tire Distributors on how to s-t-r-e-t-c-h tire mileage. Since it was developed, thousands of truck operators have signed agreements with "U.S." Distributors. It is a SUCCESS because it WORKS!



How do I get started on the Plan?

If you are interested in reducing your tire cost per mile and in saving rubber, you are invited to sign up. Just 'phone or drop a card to your nearest "U.S." Truck Tire Distributor and tell him you want to know more about the "U.S." Transportation Maintenance Plan.

UNITED STATES

1230 Sixth Avenue



This poster, 15" x 18" in color, is one of a series on care of truck tires now available from your "U. S." Truck Tire Distributor for posting in your garage where every employee can see it.

It is but one part of the complete new system of "U. S." Transportation Maintenance that is helping thousands of truck operators save rubber, cut costs and avoid delays.



CALL YOUR INDEPENDENT "U. S." TRUCK TIRE DISTRIBUTOR

RUBBER COMPANY

Rockefeller Center, New York

JUNE, 1943

Use postage-paid card inserted in this issue for free information on advertised products

93

SERVICING A SCATTERED FLEET

(CONTINUED FROM PAGE 90)

the wrist pins, bushings and rod bearings, and makes all needed repairs.

The various other units needing overhaul are repaired by other specialists. When all units have been overhauled, they are replaced on the truck from which they were removed. In the meantime, the entire chassis

and the running gear have been checked, so that, in fact, an overhaul job consists of a complete rebuilding of a truck from bumper to bumper.

After all the needed repairs are made, the engine is given a complete tune-up, the carburetor is checked with the gas analyzer, and the truck is then ready to be returned to the branch from which it was received. However, if a truck needs a repaint job at this time, or if any body repairs are needed, it is first sent to the Service Wagon Repair Co., N. Y.

This concern has done all our body and paint work for the past 20 years.

In addition to body and paint work, we farm out the following jobs: tire vulcanizing and recapping, radiator repairs and crankshaft grinding. All other work is performed in our own shops.

That's the story of our method of overhauling here at the Newark shop, and it has enabled us to maintain our fleet at top efficiency at the lowest cost possible.

PM at Branch Shops

Now let's turn to the story of our preventive maintenance program as carried on by our 22 district branch shops. All preventive maintenance and lubrication work is taken care of on the trucks in each district branch by these various shops. To help make our PM program at the branch shops more effective we try to keep one make and model of truck in each district, this makes for easier maintenance.

The personnel of each district shop is composed of one foreman-mechanic, one helper and one man for washing trucks. This force works from 1 to 10 p. m. They are responsible to a district maintenance supervisor, J. Lempke, who is in charge of all district shops.

The supervisor makes a call on each branch shop once a month, and, with a mechanic who travels with him, checks the condition of each truck. Working together, they can check a truck in approximately 15 min. The condition of each item is noted on an inspection report, shown at Fig. 1, and each item is graded for condition, that is, A-good, B-fair, C-poor and D-bad. The supervisor's judgment is the basis for determining the grade. A copy of this report is then left with the foreman of the branch. It is up to him to see that any repairs noted are made on each vehicle before the supervisor makes his next monthly inspection.

Each month the branches send in a parts order, showing the parts used on each truck during the previous month. By checking this order we can readily tell when any truck is using an excessive amount of parts to keep it in first class condition. When the supervisor makes his next inspection, he makes a thorough check of the trucks using an excessive amount of parts, determines the

(TURN TO PAGE 96, PLEASE)

PREPARE FOR SUMMER HEAT

REDUCE HOT TIRE TROUBLE

EQUIP NOW WITH *Heat-Resisting* TIRE VALVE SEALS



No. 100-BB
VALVE INSIDE
Heat-Resisting
Rubber Seal



No. 664
VALVE CAP
Heat-Resisting
Rubber Seal

Tire temperatures often reach 200 degrees and over in fast, long-haul operations. Ordinary rubber seals in valve equipment soften and deteriorate under this abnormal heat condition, resulting in pressure loss, excessive tire wear and costly service delays.

To avoid this trouble and expense, equip all tires now with Dill Heat-Resisting Valve Insides and Caps. These extra service valve parts cost no more than ordinary equipment. Order them from your jobber or tire dealer, today.

THE DILL MANUFACTURING COMPANY

700 E. 82nd St., Cleveland, Ohio

Akron • Los Angeles • Detroit • Toronto

SAVE
RUBBER
for
VITAL WAR
NEEDS

DILL *Heat-Resisting* VALVE CAPS AND INSIDES

STANDARD

SERVICING A SCATTERED FLEET

(CONTINUED FROM PAGE 94)

cause, and recommends the necessary repairs.

A copy of the supervisor's report of the trucks at each branch shop is sent to me, here at Newark. Merely by looking at these reports I can readily determine if each branch shop is giving its vehicles the proper preventive maintenance. The reports

also disclose which trucks should be brought to our main shop for major repairs or overhaul.

By this method of supervisor inspections, we can keep each truck at a high state of efficiency. It enables us to repair or replace each part before, and not after, it has failed.

In addition to his monthly truck inspection, Mr. Lempke also sends me a report on the condition of the garage, shop equipment, etc., and rates each item on a percentage basis. The report also rates the condition of all

the trucks as a group. A copy of an actual branch inspection report is shown below. If any branch shows a

BRANCH INSPECTION DECEMBER 11, 1942

GARAGE	90%
SHOP	89%
BRAKES	94%
LIGHTS	95%
STEERING	94%
BATTERIES	93%
LUBRICATION	90%
TIRE PRESSURE	95%
TIRE CONDITION	121A, 27B
FIRE EXTINGUISHERS	A
FIRE PAILS	A
MOTORS—clean	92%
RUNNING GEAR	90%
POLISH AND TOPS	84%
SHELVES AND CABS	82%
OIL FILTERS	90%
BRANCH AVERAGE	91%
FENDERS BENT	8
STAMPS MISSING	2

TRUCK CONDITION—All A on Paint and Motor

3114	3326	3339
3116	3327	3340
3120	3328	3341
3126	3329	3342
3317	3330	3343
3318	3331	3344
3319	3332	3345
3320	3333	3346
3321	3334	3347
3322	3335	3348
3323	3336	3349
3324	3337	3350
3325	3338	3351

low percentage, I make a trip to that shop myself, see what the trouble is, and try to find a remedy for the condition.

The preventive maintenance program as used in our district shops is as follows:

When a driver-salesman returns his truck to the district garage each night, the truck is checked for gas, oil and water. The truck number, speedometer reading, and the amount of gasoline and oil supplied is noted on a daily gas and oil record, shown at A, Fig. 2, which the driver signs. This daily record is posted each day onto a monthly record, illustrated at B, Fig. 2. This monthly record must be sent to the main shop at the end of each month. By this record we can easily ascertain what trucks are giving poor gas or oil consumption, and we then take the necessary corrective steps to bring them back to normal.

If a driver has any complaint to make on the performance of his truck, he enters the complaint in a book which is kept at the gasoline pump. The mechanic on duty checks this book, and makes the necessary repairs. If the requested service cannot be performed that night, then the truck is kept in the shop until the work can be finished, and the driver is given a spare truck for his route.

Every truck is lubricated once a month regardless of the mileage covered. (TURN TO PAGE 98, PLEASE)



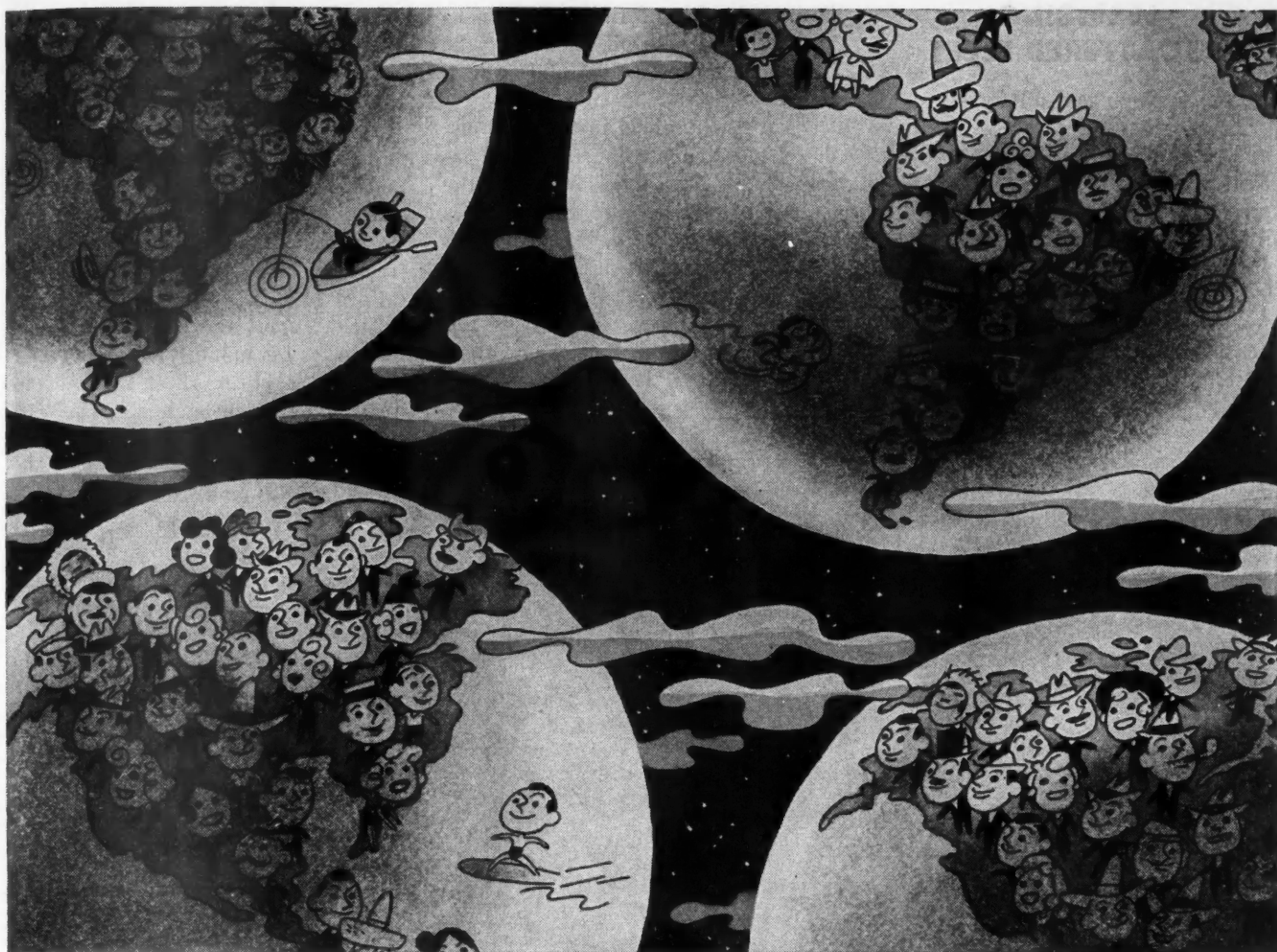
PLEDGED TO BACK HIM UP

Edwards is devoting its entire manufacturing facilities to the production of military trailers and many other articles required for Victory. • And, as individual employees, we have pledged ourselves to buy War Bonds and assist the national salvage and conservation programs to the best of our ability.

EDWARDS



EDWARDS IRON WORKS, INC., SOUTH BEND, INDIANA



They'll carry the populations of four worlds...

9,030,000,000—or four times the population of the earth—that's the estimated number of revenue passengers to be carried by buses in the United States during this present year.

To MEET THIS TREMENDOUS TASK, bus operators are doing everything humanly possible. They are co-operating closely with the O.D.T. plans of Preventive Maintenance and staggered hours. Moreover, they are exercising the greatest care in the selection of all new equipment and replacement parts.

These men know that long life and dependability are factors which must govern the selection of any new equipment. That is why, when choosing new batteries, more and more fleet owners are insisting on batteries equipped with Fiberglas* Retainer Mats.

For, putting it briefly, Fiberglas-equipped batteries...



1. Stay on the job up to twice as long as batteries not so equipped (1).
2. These batteries stand up under extreme vibration... an important reason why they are used in many armored cars, trucks, and submarines.
3. These batteries have excellent cold-starting characteristics and higher average power output during their greater life.

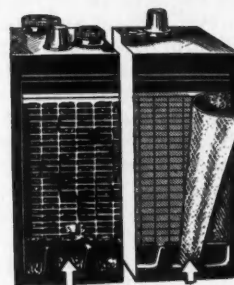
Remember This

Today, the Army and Navy use ever-increasing quantities of Fiberglas Retainer Mats. This may make it difficult sometimes for fleet operators to obtain Fiberglas-equipped batteries promptly. If so, please remember that our number one job is to provide ample quantities of Fiberglas for war equipment.

Please also remember that you, too, are helping conserve important war material when you take extra special care of your pres-

(1) According to impartial tests conducted to meet S.A.E. specifications.

ent Fiberglas-equipped batteries. Treat 'em extra special right!



Left: Without Fiberglas Retainer Mats, power-producing material sheds to the floor of the battery, piling up sufficiently to short the cell.

Right: With Fiberglas Retainer Mats, active material is held in place longer on the battery grids, giving longer battery life and more constant power during battery life.

Owens-Corning Fiberglas Corporation, Toledo, Ohio. In Canada, Fiberglas Canada, Ltd., Oshawa, Ontario.

FIBERGLAS

*T. M. Reg. U.S. Pat. Off.

BATTERY RETAINER MATS

SERVICING A SCATTERED FLEET

(CONTINUED FROM PAGE 96)

ered. Crankcase oil is changed at least every 3500 miles, more frequently if the oil shows dirty on the dip stick. If the oil is dark when changed, we clean the crankcase with a standard flushing oil before refilling. We use SAE 40 oil in the summer and SAE 20 or 30 in the winter. We use an additive in our oil to help

keep sludge from forming. All trucks are equipped with oil filters, and the bags are changed every 1500 to 2000 miles.

Each truck is held in the shop one day a month for a thorough PM inspection. Before the work starts the engine is cleaned and the truck is washed and polished. The inspection includes a complete lubrication and a thorough check of the truck from bumper to bumper. No part of the vehicle is missed. Particular attention is paid to the exhaust system.



Get Acquainted with FEL-PRO Now!

Today Fel-Pro is engaged in an all-out program of gasket development and production for war needs. Tomorrow you will profit by the new and improved gaskets which today's accelerated emphasis of gasket development will make possible. You can depend upon it that Fel-Pro will have the finer gaskets and other sealing materials required by cars of tomorrow.

Today . . . right now is the time to get acquainted with Fel-Pro. Today . . . and as long as consistent with the war effort . . . Fel-Pro's new plants and greatly expanded production make it possible for us to continue to provide you with those gaskets and sealing materials so indispensable to your job of keeping America's cars and trucks rolling!



Fel-Pro Products Mfg. Co. 1520 CARROLL AVE., CHICAGO, ILL.

- ★ ★ ★ ★ ★ ★ ★ ★
- ★ *Keep 'em Rolling* ★
- ★ *with FEL-PRO* ★
- ★ **GASKETS**—for every automotive application. ★
- ★ **PACKING**—for water pumps, bearing seals, etc. ★
- ★ **GREASE RETAINERS**—in sizes and types to fit all cars. ★
- ★ **TAPE**—Woven Asbestos Lining Tape — Twisted Asbestos Wicking. ★
- ★ **MANY OTHER** Automotive Sealing Products. ★
- ★ *Most of these products are available packaged in boxes or sets.* ★
- ★ ★ ★ ★ ★ ★ ★ ★

In our business it is very important that no gas fumes enter the body of a truck to contaminate any of the bakery products.

The mechanic making the inspection does not work from a check sheet nor does he record the work he does. We leave it entirely up to him to check and make any necessary corrections. He knows that he cannot afford to miss anything because the district supervisor will find it when he makes his monthly check.

When a check sheet is used, we believe that a mechanic may check off a lot of items that he never performed. Therefore, we do not believe it is helpful or necessary to use a check sheet or record of the work done. We leave it up to the mechanic to keep the vehicle in proper repair. That this method has proved a success is attested by the fact that road failures due to mechanical trouble only average one per week for each district branch.

If during the PM inspection a mechanic finds that a unit such as a transmission or rear axle needs an overhaul, the unit is removed from the truck and sent to the main shop for this work to be done. The unit is picked up by one of our tractor-trailer outfits which makes a trip each night to the branch to deliver our bakery products. When the unit has been overhauled, it is returned to the branch in the same way. Meanwhile, a spare truck does the job of the truck undergoing repair.

We have found it necessary to time the ignition to the fuel we use. Lowered octane ratings of present gasoline has compelled us to retard the timing about three degrees. This has resulted in a slight drop in mileage.

Thermostats and radiator covers are used on all our trucks to help keep engine temperature at the most efficient level, and thereby help to get better gasoline mileage.

We take particular care of our batteries, checking them twice a week, adding water, keeping connections tight and terminals free from corrosion, so as to assure prompt starting and thus prevent gas wastage.

All road failures are handled in the following manner: When a truck breaks down, the driver calls in to the branch and states what he believes the trouble to be. A mechanic is then sent to make the necessary repair, provided the vehicle is not

(TURN TO PAGE 100, PLEASE)



**Victory plants all
over the country
use them . . .**

SIOUX is playing a vitally important role by supplying the nation's victory production plants — dependable, accurate, and efficient tools with which to speed up production.

SIOUX engineers are developing and applying advanced design and operation principles to our wartime production that will be reflected in a new, still better and more efficient line of SIOUX TOOLS for peace-time use.

SIOUX TOOLS

**STANDARD THE
ALBERTSON & CO., INC.**



**WORLD OVER
SIOUX CITY, IOWA, U. S. A.**

SERVICING A SCATTERED FLEET

(CONTINUED FROM PAGE 98)

too far from the branch shop. If the distance is too far, the driver is instructed to call a local repair shop and have it take care of the trouble. If the vehicle requires a towing, we engage a local concern to do this. We find this method less costly than trying to keep a tow truck of our own at each branch shop.

Tires on local delivery trucks are checked twice a week by the helper at each branch shop and, in addition, they are checked at the regular PM period. This inspection consists of inflating to the proper pressure, examining for cuts, nails, glass, etc.

Tires or tubes needing repairs are sent by the branches to Newark, by one of our tractor-trailer outfits. No tire or tube repairs are done at any branch shop. By this method we only maintain one tire department, and this enables us to keep a better check

on all tire repairs, than if each branch performed its own repairs. All tire maintenance comes under the capable supervision of R. R. Monk, who is an old tire man. His experience has been invaluable to us in solving many of our tire problems.

Tires are sent out to be vulcanized or recapped when necessary. We recap tires twice. It has been our experience that we get about 75 per cent of the original mileage from a recap. We use a tire until it wears as close to the breaker strip as possible before we recap it. In this way we feel that we get all possible wear out of the original tread.

We use recaps on the front wheels of trucks or tractors, and on trailer wheels. We use tires with original tread on the rear wheels of tractors, or trucks, because they are subject to heavier loads than the fronts.

We are trying in every way to impress on our driver-salesmen the importance of taking every precaution to preserve our rubber supply. Drivers are instructed to pull in to a local gas station for air whenever they notice that any tire on their truck appears low in pressure. On our tractor-trailer outfits, the drivers are instructed to check the air pressure each day before they leave the garage. Pressure also is checked every night when the vehicle returns to the garage. We do not allow our drivers to bleed tires.

Dual tires on our heavy-duty equipment are checked each month to see that they are properly matched. We do not allow over $\frac{1}{8}$ in. difference in diameter between duals. We use a straight-edge ruler in making this check.

This completes the picture of our maintenance program, with the exception of one important part, and that is salvage. Although salvage is very important to our maintenance program, I have not mentioned it in this article because this subject was covered fully in an article which appeared in the December, 1942, issue of COMMERCIAL CAR JOURNAL.

END

(Please resume your reading on P. 54)

Ohio Gets Welding Library

A new library on welding, the gift of A. F. Davis, of The Lincoln Electric Co., Cleveland, has been established at the Ohio State University, Columbus. The library makes available for the first time in one place all important literature on welding.

MAINTENANCE
helps 'em sink the subs

It takes a lot of maintenance work to keep a gun in perfect firing condition. The complex weapons are only deadly when accurate... and maintenance is important.

Maintenance of brakes is important, too, for brakes are the guardians of motorized transport. Ferodo Brake Linings give safe stopping power. They save tires and help keep cars on the road.

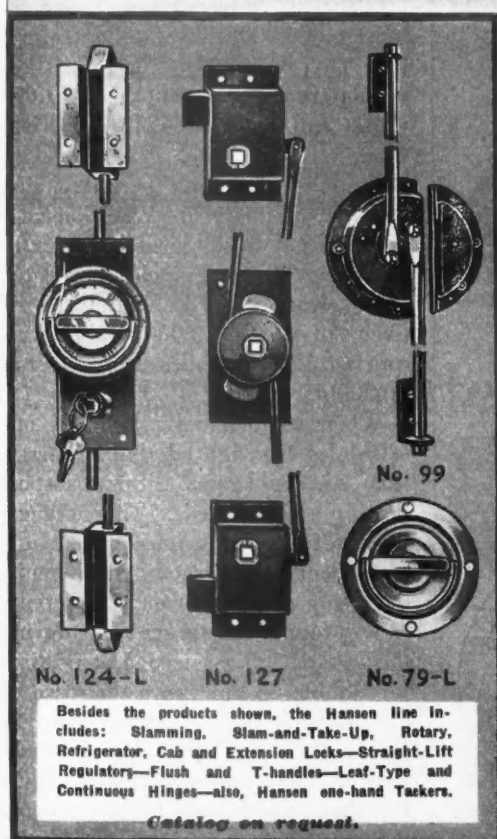
FERODO FOR ROAD SAFETY

FERODO
BRAKE LININGS

FERODO & ASBESTOS • INCORPORATED • NEW BRUNSWICK, N. J.

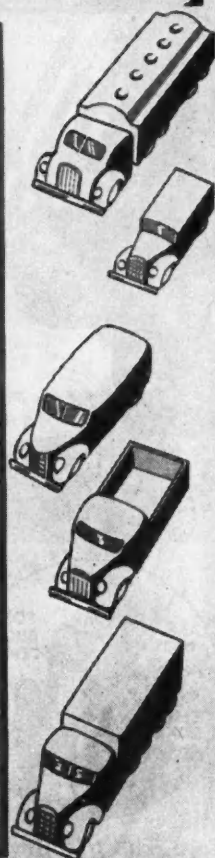


Hansen-Equipped TRUCKS are VITAL LINKS in the Country's Transportation Chain



Besides the products shown, the Hansen line includes: Slamming, Slam-and-Take-Up, Rotary, Refrigerator, Cab and Extension Locks—Straight-Lift Regulatory—Flush and T-handles—Leaf-Type and Continuous Hinges—also, Hansen one-hand Tacklers.

Catalog on request.



TRUCKS ARE A VITAL LINK 4,910,000 Registered in World War No. 2

WITH 54,000 communities entirely dependent upon truck transportation—with 94,000 trucks used as auxiliary equipment by the railroads—with an increase of more than 4,000,000 trucks in this war over World War No. 1—motor transport proves vitally important in war effort.

Among these millions of tanks, trucks, trailers—what part is Hansen Hardware playing? It is keeping trucks on the go—day and night. It not only seldom requires repairs or replacement—it actually in many instances outlasts the job on which used!

The majority of tanks used for hauling oil and refueling airplanes are Hansen-equipped; so are most of the custom-built bodies in other essential types of service. Must doors be kept tight-shut, rattle-proof? Must merchandise be made safe from loss or theft? Must space be conserved? Is easy application—adaptability—required? HANSEN is the answer.

No. 79-L FLUSH HANDLE. Fits flush with door. Saves valuable space. Increases load capacity. Attaches to metal or wood.

No. 99 ROTARY DOOR LOCK. Draws doors solidly together. Prevents rattle and play. Complete, ready to install.

No. 124-L SLAM-AND-TAKE-UP LOCK, with Locking Cylinder and two keys. Protects merchandise. Flush or offset bolts, as specified.

No. 127 SLAMMING LOCK. For tank-truck or utility body compartments. Locks at top and bottom. Standard uses reverse bolts.

ASK FOR CATALOG, showing the complete Hansen Line, if you do not already have one.

Keep'em running—Keep'em flying—with

HANSEN



A. L. HANSEN MFG. CO.

5047 RAVENSWOOD AVE.
CHICAGO, ILL.

TANK TRUCKS SAVE TANK CAR BUSINESS

(CONTINUED FROM PAGE 55)

consigned to destinations less than 100 miles from point of origin. This directive affected our ability to serve something like 40 all-year quantity customers, including public utilities, municipalities, institutions and plants engaged in essential industries. Later in the year, the order affected still another group—seasonal users.

In October, 1942, ODT issued a

second directive setting a rail shipment minimum of 200 miles. However, this later ruling made little difference in our delivery routine, because we already had converted to over-the-road operation.

When ODT's original order curtailing rail shipments became effective, we had one factor in our favor: We had only to serve those fuel customers who required oil for power production. In May there is no demand for space heating fuel.

Right then, however, we still had

to convince ourselves that the change-over would work out. So, as the first step in our contemplated conversion, we went back over our records and set up customer requirements for a six-month period. Translating the figures thus obtained into terms of gallonage, mileage and transit time, we decided that we could handle our out-of-town deliveries during the summer, at least, by means of transport trailers.

We therefore acquired, and put into operation, six transport trailers. Averaging 3300 gal. each, these transports approximate in total carrying capacity that of two 10,000-gal. railway tank cars.

Following with but few minor changes the delivery schedules we had originally mapped out, we found that the transport trailer arrangement worked to our entire satisfaction and to that of our customers. During the half year ending last Nov. 30, our six transports delivered almost 6,000,000 gal. of oil in several types to 40 quantity users. These units traveled just short of 51,000 miles, and required 4748 hr. driver time.

For the six-month period ending May 31, of this year, which includes peak season business and service to additional customers closely related to the war effort, we anticipate delivery of nearly 10,000,000 gal., requiring 124,000 miles of travel and 10,200 driver-hours.

When we originally laid out our schedules, we figured that, if necessary, we could operate our transport fleet on a 24-hr. basis. This arrangement, of course, would give us the equivalent of 12 tractor-trailer units operating during the day time, only.

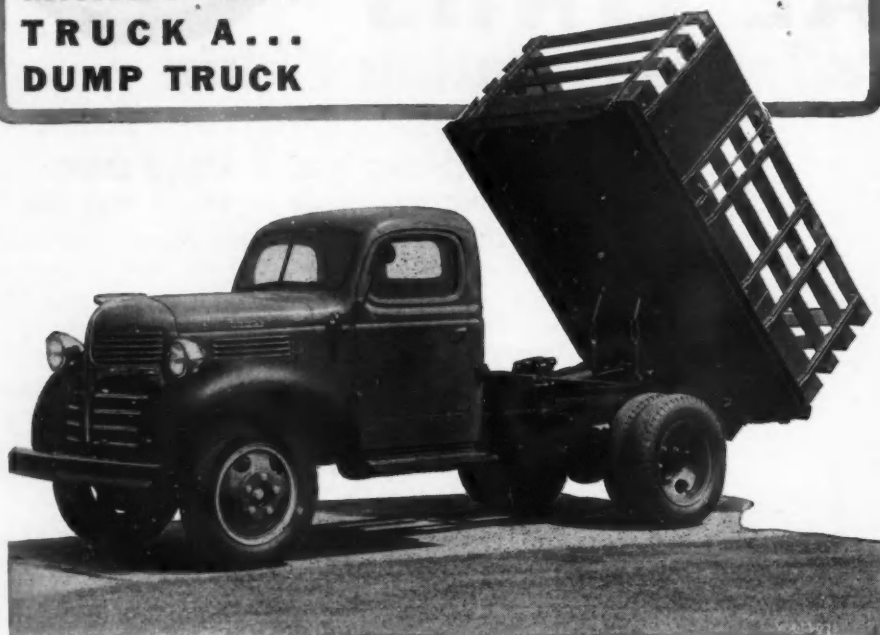
We found, however, that during the first period we needed at no time to "double up" on more than two of our units at once. During the second period we "doubled" on only four of our transports at one time. In other words, we have managed to carry out our delivery schedules without employing more than 83.3 per cent of our six-unit fleet's maximum hauling capacity.

In addition to our ability to put all units on a 24-hr. operating basis we still have reserve carrying capacity. As a safeguard against sudden and unforeseen power production demands, and as a "standby" in case

(TURN TO PAGE 104, PLEASE)

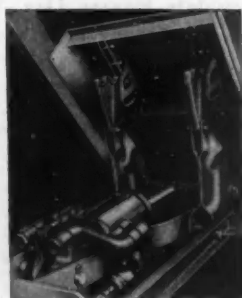
A HERCULES HYDRAULIC BOOSTER HOIST

**MAKES ANY
TRUCK A...
DUMP TRUCK**



Install HERCULES DOUBLE-ARM HYDRAULIC HOISTS under your platform, stake, express or special bodies, which are now idle. Unload the easy way!

With wartime restrictions preventing your purchase of all the new equipment you need, it's more important than ever that present equipment be used at maximum efficiency.



Model KXE Hercules Booster Hoist, with 6" cylinder, for bodies up to 12 feet long. Rated capacity of 4 tons with a 9 foot body. Control valve is operated from the driver's seat, and the low oil pressure required assures long life of unit.

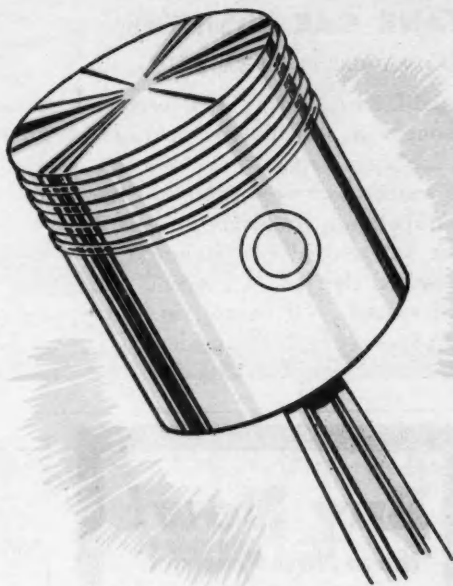
Reinforcing plate relieves lifting strains. Assembly includes 12 foot steel sills for reinforcement of wood body sills.



**HERCULES STEEL PRODUCTS CO.
GALION, OHIO**



You can buy a new tie
in 3 minutes...



but it may take weeks
to replace a scored
piston...

The answer is
Preventive Maintenance
now with Shell
Automotive Lubricants



When an engine overheats and "seizes" it's good-by pistons . . . parts you can't always get when you need them. Then, too, there's that matter of an idle piece of equipment while the scored cylinder block is re-bored and pistons are installed.

Many of these time-wasting failures can be avoided by careful attention to lubrication.

In peacetime, engines were operated under more or less normal conditions. But today, they are being worked harder and for longer, continuous periods of time. This means oil should be changed at more frequent intervals.

Yes, these more frequent changes do take time. But the few minutes they do take may save you days of delay later. Don't wait for a breakdown. Call in the Shell man now. Let him help you plan your Preventive Maintenance.



SHELL AUTOMOTIVE LUBRICANTS

TANK TRUCKS SAVE TANK CAR BUSINESS

(CONTINUED FROM PAGE 102)

of road-failure, early in December we bought a seventh tractor-trailer unit, having a capacity of 3400 gal.

No sooner had we disposed of the initial operating problems in regard to our rail-to-road conversion than we attacked the job of revising our record system. Of course, in making changes we had to consider ODT requirements as well as our own.

For local deliveries we had been using a simple type of Daily Driver's Report. We soon found that this type of report would not serve in providing figures required by ODT, so we revised to fit current needs. Our new form is of the same size as the old one (4¼ x 6½ in.) and, like it, bound into books having perforations near the top, so that the driver may detach filled-in sheets, retaining the rest of the book. (See Fig. 1.)

Turned in by drivers to the shipping clerk at the plant, from which

delivery is made, these reports come to my office on the following day where they are posted to Daily Office Work Sheets, one for each unit. Bearing in the upper left corner the unit number, the headings on this sheet correspond with data spaces on the driver report form. For this record we use accountant's 13-column work sheets, fastened together at the top of the pad by a spiral wire hinge. Each work sheet carries operational detail on each of our vehicles for one month. (See Fig. 2.)

At the end of the month each sheet is totaled, and the footings on each are posted to a Monthly Recapitulation and Cost Control Sheet. The latter is an 18-column stock form obtainable in stationery stores. This sheet (one for each unit) has columns corresponding to those on the daily work sheet, and additional operating cost data. (See Fig. 3.)

As readily will be seen, the grouping of figures on individual sheets provides fleet operation costs in toto and per mile. It also gives us a per barrel cost averaged for all deliveries. And, by assembling figures on the units operating in any particular part of our territory, we can easily obtain per barrel delivery cost in that area.

This latter figure is highly necessary for establishing or revising delivered customer prices. When we first decided that we would convert from tank car to transport, we were decidedly "on the spot" in respect to delivered prices. Previously, they involved little more than freight rates between two points.

The change to over-the-road delivery brought new and unknown factors into the picture for Belcher. By considering the elements of mileage and man-hours we arrived at a working estimate, which proved to be closer than we had hoped. Now, however, we can rely for our pricing on actual cost-figures.

Nor do we depend on drivers' reports of transit time and delivered quantities. This data appears, too, on a Daily Sales Report made up by the shipping clerk at each of our two distributing stations. This form is a large loose-leaf binder sheet. (See Fig. 4.)

While, according to our understanding, it is not obligatory, we keep an ODT Daily Record Form. The information for this record we

(TURN TO PAGE 106, PLEASE)

Buy Now!
these New Precision
BEAR TOOLS
for *Zuicker*
WHEEL and TIRE
Inspection Service

Saves TIME—Saves LABOR

BEAR
No. 21 Gauge

for **Caster—Camber—King Pin**

This combination gauge quickly and accurately checks **caster**, **camber**, and **king pin inclination** angles of all cars, trucks and buses. Improved design, equally efficient on both conventional and independent suspension wheels. Equipped with rim clamps to hold gauge on wheel while corrections are being made.

No. 21 Caster-Camber-King Pin Gauge, complete

\$27⁵⁰*

f. o. b. factory

Act QUICK to get your

BEAR JIFFY
Tire Spreader

Absolutely Essential for Rapid Tire Inspection

One-man tool that makes tire inspections so quick and easy you can afford to do OPA inspections. Thousands in use! Limited quantity still available to shops, service stations, dealers and fleets, at remarkably low price.

No priority needed for No. 65, regular model for passenger car tires.

\$17⁵⁰*

f. o. b. factory

STOP LIFTING AND TUGGING TIRES

SAVE TIME—Just roll tire onto spreader, adjust grips, push down handle—and presto—the tire is spread.

SAVE LABOR—No lugging or lifting tire. Exclusive Self-locking Device holds tire in any desired degree of spread. Quickly locked or released without straining or tugging.

PORTABLE—Use it anywhere.

FOR ALL SIZE TIRES—No. 65 Regular model for passenger car tires. No. 65 Heavy Duty for bus and truck tires.

You NEED This LOW-COST

BEAR
No. 23 Gauge

for **TOE-IN—TOE-OUT**

Make wheel toe-in checks quickly and easily now, with this new, improved, one-man gauge. Simply place indicator against outside of tire for both front and back readings on same wheel. Measuring scale registers degree of toe-in or toe-out in fractions of an inch. Designed to check accurately. Fits all wheel sizes; adjustable to all tread widths.

No. 23 Toe-In Tram Gauge

\$15⁰⁰*

f. o. b. factory

Time is Money

Save it!

All 3 Time-Saving
BEAR TOOLS \$60*
only

f. o. b. factory
or can be bought separately, as above

*Price slightly higher West of Rockies

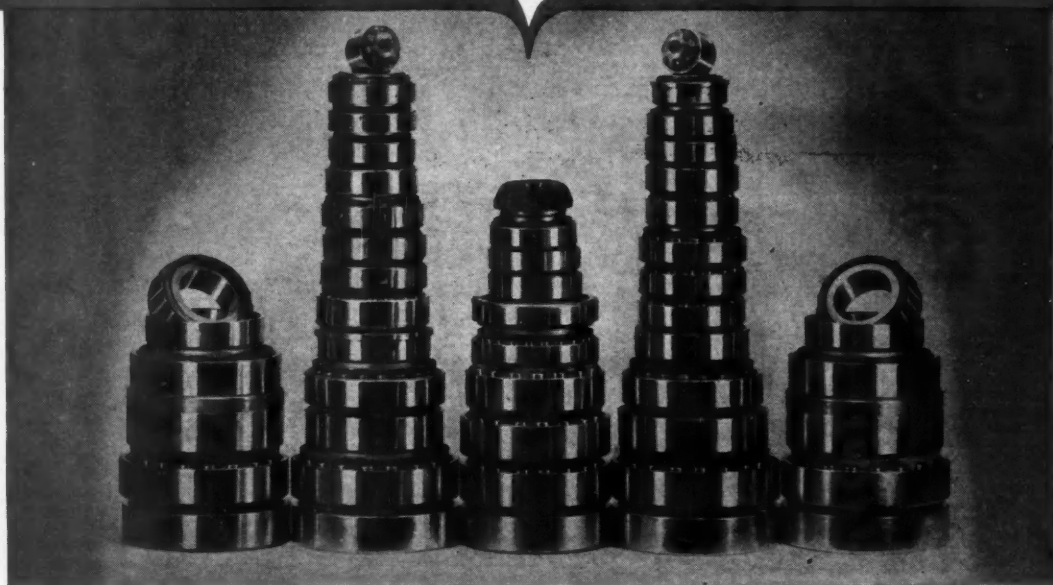
ORDER TODAY From Your Jobber
or if he cannot supply,
send your order direct to

BEAR MFG. CO.
Dept. C9, Rock Island, Illinois



MACK 6 x 6 USES 48 TIMKEN BEARINGS

What could be a Stronger Reason for
Genuine Timken Bearings for Replacement



Mack trucks in common with practically all leading makes use large numbers of Timken Bearings. Forty-eight of them are installed in the Mack 6 x 6 shown here.

Leading truck manufacturers are free to buy any make of bearing on the market. There is but one reason for their buying Timken Bearings and that is performance . . . the kind of bearing performance that has helped them establish and maintain their leadership.

We submit this logic as the most outstanding reason why you should replace a Timken Bearing with a Timken Bearing whenever replacement becomes necessary for whatever reason. The Timken Roller Bearing Company, Canton, Ohio. Service-sales Division.

TIMKEN
TRADE-MARK REG. U. S. PAT. OFF.
TAPERED ROLLER BEARINGS
"ALL THERE IS IN BEARINGS"

TANK TRUCKS SAVE TANK CAR BUSINESS

(CONTINUED FROM PAGE 104)

post every day from our Daily Driver's Reports. The data on the ODT form, kept in the prescribed manner, will be highly essential, we have been advised if we wish to appeal from decisions in regard to allowed mileage, gasoline or tires.

The form recommended by local

ODT officials is 11 x 17 in. in size and marked "Form 1115 ODT-DR." However, we found that the columns, which run parallel to the longer dimension of the sheet, were too narrow. The figures were crowded and the record difficult to keep. After studying this form, we could see no good reason why the columns should not run parallel to the shorter dimension of the paper, and the number of horizontal lines be reduced to

31. By this readjustment of space on the sheet we could widen the columns, and print headings in easier-to-read type.

Making up a specimen form in this manner, we submitted it to local ODT officials. They found no specification that columns must run parallel to the longer dimension of the form, and ruled that our version of the form should be satisfactory. So we had a supply of revised forms printed up, and now use them. (See Fig. 5.)

The Short Cut To BETTER BRAKES and TIRE SAVING



For today's service you need GATKE Brake Blocks, *Custom-Bilt* for your job.

They give *smooth, positive, non-grabbing* action that *saves tires*; *dependable* stopping under *all* conditions; and *long* service life with *fewer* adjustments at the *lowest* maintenance expense.

All over the country, on all kinds of fleets, doing all types of hauling, GATKE Genuine *Custom-Bilt* Brake Blocks are saving time and money for Fleet Operators.

The GATKE *Simplified* Fleet Survey System helps you get *all* the advantages and saves time for you too. Just ask your GATKE Jobber or write for particulars.



GATKE
CUSTOM-BILT
BRAKE BLOCKS

GATKE
CORPORATION
228 N. LaSalle St., CHICAGO

Building the Fleet

Once we had decided upon our conversion plans, in order to put them into effect we bought used equipment. For one thing, the idea was by way of being an experiment. For another thing, it was extremely doubtful that we could have obtained new units, had we tried.

Shopping around, we found that we could get what we needed at two different sources. From a transfer company, equipped for making factory-to-dealer automobile deliveries, we purchased six tractors. From another transportation firm we bought an equal number of tank trailers.

In order to adapt this mismatched equipment to our own particular use we had to do a sizable amount of rebuilding. On the tractors this work included provisions for carrying heavier loads than they previously had handled and for weight redistribution.

The frames were reinforced by a 7/16 in. steel plate arc welded to the outside of each side member. These plates were cut from flat stock to the exact width of the frame with an acetylene torch, and long enough to extend from a point just back of the cab to the rear of the fifth wheel. The rear springs were built up by adding four leaves to the main spring and two to the overload spring.

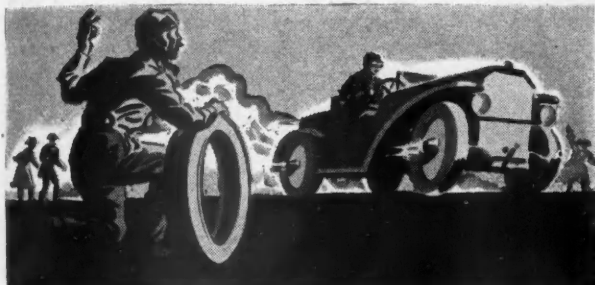
To obtain better load distribution on the tractors, and a smoother application of power to their drive wheels, we substituted two-speed rear axles. While this change-over meant quite a bit of additional shop work, we believe that the results secured have justified the time and effort involved.

Not only have the two-speed axles given excellent performance but, in our opinion, they also should share credit for a healthy decrease in gaso-

(TURN TO PAGE 108, PLEASE)



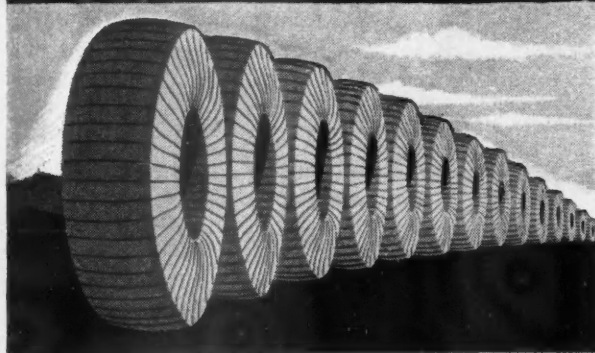
Dayton's Continuing Leadership...



YESTERDAY . . . During 37 years of pioneering, research and development Dayton, the quality leader, introduced many tire "firsts" which have become recognized as standard for the industry.



TODAY . . . Dayton Thorobred Tires are proving their inbuilt strength and durability on trucks and buses—also on anti-aircraft guns, cannons, trucks and trailers for the United States and her Allies.



TOMORROW Dayton's time-tried and war-proved experience in the pioneering and developing of synthetic and natural rubber compounds and processing methods will build the post-war Thorobred quality Tire—as always—for continuing quality leadership.

Dayton Thorobred Tires are available to qualified fleets under the rationing program.

THE DAYTON RUBBER MANUFACTURING COMPANY • DAYTON, OHIO.

Dayton Tires

BY DAYTON...PIONEER IN SYNTHETICS...LEADER IN RUBBER

IN 1934—climaxing 20 years of notable tire "firsts," Dayton built America's first successful synthetic rubber tire. Since then our research, use and development of synthetic application to automotive and industrial rubber products has been continuous and successful.

TANK TRUCKS SAVE TANK CAR BUSINESS

(CONTINUED FROM PAGE 106)

line consumption. In checking our fuel-mileage record for the first six months of our tractor-trailer operation we find that during the second three-month period our average mileage was 19.71 per cent higher than during the first three months. Of course, other factors, such as more careful operation and a closer adjust-

ment of carburetion and ignition, also helped.

We are certain, also, that the change increased tractor tire mileage by 5 per cent or better. However, tire economies covering so short a period are harder to prove by the record than gasoline mileage kept on a daily and monthly basis.

In order to make mismatched tractors and trailers interchangeable we had to shift fifth-wheel locations, and, in some instances, their heights above the frame had to be changed, as well.

We refinished tractors, trailers and tanks in our standard fleet colors—dark blue with yellow lettering, outlined in red. Incidentally, the entire job of converting and reconditioning these tractor-trailers was done in our oil department maintenance and repair shop. U-shaped, it covers an area of approximately 1800 sq. ft.



AVAILABLE FOR ESSENTIAL WAR HAULING

We have, at our main plant in Louisville, Kentucky, a large stock of new Van trailers ready for immediate delivery to operators who have a certificate of transfer (PD-321).

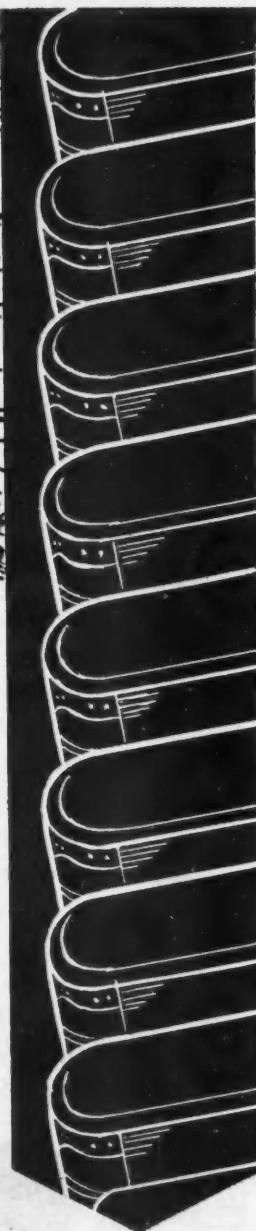
If you need more equipment for essential War Hauling we, or any one of the many Kingham distributors located in principal cities, will gladly advise you regarding the use of application form PD-310, for obtaining a certificate of transfer. Write us!

A LOAD BEHIND IS A TRIP AHEAD

KINGHAM TRAILER COMPANY

LOUISVILLE,

KENTUCKY



Belcher has excellent equipment for doing practically any type of machine shop work

Because we have plant and marine machinery, as well as an automotive fleet to maintain we have a sizable amount of machine shop equipment. This includes two planers, two drill presses, four lathes and a power hack saw.

Ranging from a small machine, having a 2-ft. bed and 6-in. swing, useful for starter and generator work, to a machine having a 12-ft. bed and 36-in. swing, the shop's lathe equipment is able to take care of practically any job it is called upon to do. As for welding equipment, we have both acetylene and electric units, the latter being a 300-amp. portable unit.

Our regular automotive shop personnel consists of a foreman and one first-class mechanic. However, plant personnel may be drawn upon for any extra help needed. Except for some emergency, our fleet maintenance requires little or no night work. While a part of our fleet—the exact number of units varies—operates out of Port Everglades, all but minor repairs and adjustments are handled at Miami.

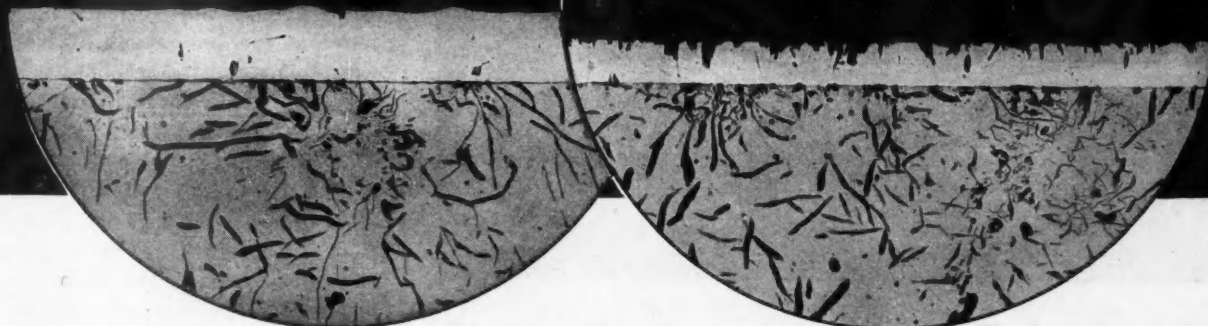
Over the years, we have developed a maintenance system for our local fleet which seems to fit well into the general scheme of our new over-the-road operation. Briefly stated, our policy is this: We employ our facilities—shop space and personnel—to (TURN TO PAGE 110, PLEASE)

What do we mean,

"PORUS"?

This photomicrograph, original 100x, shows a cross section of a .004" thick chromium deposit on cast iron. This is the hard, wear-resistant KROME of PORUS-KROME. Except for minimal valleys, the surface is level and dense, affording little hold for oil.

Here you see the meaning of "PORUS". For effective lubrication, a controlled amount of "oil reservoirs" have now been created by further processing. The plateaus between "reservoirs" have been honed to provide a true bearing surface.



PORUS-KROME is the precision application of hard chromium, having controlled porosity and smoothness, to internal combustion engine cylinder bores and other bearing surfaces. The improved lubrication plus low friction adds greatly to both life and efficiency by decreasing corrosion and abrasion.

Longer engine life and improved performance are attested by outstandingly successful results in exacting tests and in engines in actual service.

Our experience and methods in the application of PORUS-KROME may interest you as they pertain to your own problems and products.



PORUS ★ KROME

Multiplies Engine Life

VAN DER HORST CORPORATION OF AMERICA CLEVELAND, O.
CLEAN, N. Y.

TANK TRUCKS SAVE TANK CAR BUSINESS

(CONTINUED FROM PAGE 108)

handle those jobs which we think we are equipped to do better than an outside servicing agency. If we feel there is an advantage in sending out any particular type of work, we do it. For this reason we send out frame and axle work, major brake work (relining and drum turning) cylinder block reboring, battery rebuild-

ing and radiator repairs. Practically all other work we do ourselves.

To facilitate the handling of engine overhauls the shop is equipped with an overhead track and portable chain-falls, ranging from 1/2-ton to 2 tons. And in order to make quick changes possible, the shop keeps three rebuilt engines, of different types, on hand.

Included in the equipment for carrying on our general maintenance work is a valve refacer, a hard seat grinder, a 100-amp. battery quick

charger, a 7 1/2 cu. ft. air compressor, a 20-ton press, portable rear and transmission lubricators and hydraulic jacks in capacities from 1 1/2 to 20 tons.

At the back of the shop a 3 x 20 ft. metal-covered work bench, having in-built cabinets underneath, mounts a high-speed grinder, vises and a spark plug cleaner.

The time saved by farming out the simpler routine items we put into the more skilled types of maintenance work, such as machining and welding operations. For instance, the shop makes up practically all bushings needed. The material for these comes from discarded boat propellers and large bushings which may be cut down to make smaller ones. We also machine most of the larger bolts required for chassis conversions, repairs and body mounting.

We do all body and metal work. For this we have metal working tools—dollies, spoons and jacks. A carpenter employed for general plant maintenance does any woodwork required for cab reconditioning.

We rebuild engines, transmissions and rear ends but such items as carburetors, fuel pumps and distributors we replace on an exchange basis, keeping extra units on hand for immediate installation.

Shop record keeping is very simple. It consists of only one form—a work order. (See Fig. 6.) For convenience in filing this form, printed on white paper, is the same size as the Daily Driver's Report, previously mentioned.

While general supervision over oil department truck maintenance rests with the plant superintendent, each driver shares this responsibility. He must see to it that his truck receives its scheduled chassis lubrication and it is up to him to check motor oil and tire pressures daily. All signs of tire damage or excessive wear, and mechanical difficulties must be reported promptly.

A carry-over, perhaps, from "horse and buggy days," when each driver looked after his own horse, this driver responsibility plan is predicated on the theory that our operators take a personal interest in the vehicles they drive. They have good reason to do so because we pay them wages well above the local scale. Incidentally, most of our drivers have

(TURN TO PAGE 112, PLEASE)

GRIZZLY

REG. U. S. PAT. OFF.

BRAKE LINING



Moulding GRIZZLY
Roll Lining at the
new Paulding Plant
—most efficient in
the industry.

The kind of *Friction* that is *Smooth*

The combination of effective friction and smooth action is an outstanding feature of Grizzly performance.

That this combination endures undiminished throughout the entire long life of the lining is an outstanding feature of Grizzly economy.

Grizzly's constant friction efficiency results from the exclusive formula of asbestos-friction compound developed by Grizzly engineers. The smoother action results from moulding this compound—

under hundreds of tons of pressure—into a semi-rigid solid, which is non-absorbent, non-abrasive, non-glazing and will not separate.

These are times when performance and economy must prevail! Grizzly Brake Lining in rolls, segments, sets or blocks, will operate your automotive equipment longer with a sharp reduction in adjustment costs and with the safety and satisfaction of Grizzly's superior braking performance under all conditions of service.



The new Grizzly Catalog (just out) features lower list prices on Heavy Duty Linings—Ask your Jobber!

GRIZZLY MANUFACTURING COMPANY
PAULDING, OHIO

PLANTS AT PAULDING AND LOS ANGELES
Warehouse Stocks in Principal Cities

Greater Margin of Safety



Between INSPECTIONS and LUBRICATIONS

Safety between inspections is best insured . . .

by knowing that inspections are thoroughly made in accordance with a proven procedure as offered by National Periodic Inspection Service.

by knowing that all internal motor parts are cleaned of sludge, gum, "varnish" and other damaging products of combustion and oxidation with National Savit Service.

by knowing that clean motors will be kept clean longer and lubricated better with National En-Ar-Co C₁ Motor Oil in the crankcase.

Write today for the complete story of National SAVIT Service and free samples of National Periodic Inspection Service forms.

CLEAN MOTORS LAST LONGER COST LESS TO OPERATE

**NATIONAL EN-AR-CO MOTOR OILS and LUBRICANTS
NATIONAL WHITE ROSE GASOLINE**

THE NATIONAL REFINING COMPANY • CLEVELAND, OHIO

East of Ohio . . . The Globe Refining Company, Cleveland, Ohio

(CONTINUED FROM PAGE 110)
been with the company for an average of 12 yr.

Oil-changes are made on a 1000-mile schedule, which, as stated, drivers must maintain. For summer and for winter operation, respectively, we are using SAE 20 and SAE 30. Filters are changed every 5000 miles.

Since adding the tractor-trailers to our fleet we have inaugurated the use of a tire record, which is a 5 x 8-in. white card. (See Fig. 7.) This card, kept in the truck in a cellophane

holder with the unit's Certificate of Necessity, inventories the tires on that truck, and shows any wheel-to-wheel changes. If a tire, previously not on the truck, is installed, a new card is made up to list the current tire inventory. The old card then is turned into the office. In this way we have no difficulty in recording for ODT reports the history of each tire used.

END

(Please resume your reading on P. 56)

HOW HERTZ CONSERVES TRUCKING EQUIPMENT

(CONTINUED FROM PAGE 57)

and thus keep them out of vital war service. Because of this policy of small inventories of parts, it is necessary during these times for the various Hertz shop superintendents to forecast their requirements sufficiently in advance so as to allow ample time to obtain their materials.

In the development of the Hertz PM program in their numerous shops, it has been their policy to adapt it to the specific problems and needs of each particular shop and, in some cases, to the needs of individual customer fleets. Thus they have tried to keep their respective PM shop programs elastic. They have only one emphatic preventive maintenance rule: "PM inspections for all units must be carried through at regular intervals, and thoroughly done."

As the basis of this PM set-up they use the three well-known, standard GMC forms A, B, and C for Gasoline Truck and Tractor Service. Form A is used for inspections at 1000-mile or 30-day intervals, and it lists 41 items for adjustment and lubrication or inspection; form B is for inspections at 5000 miles and includes 23 inspection groups; form C is for inspections at 15,000 miles and includes 22 inspection groups.

All trucks regardless of their operation are scheduled for PM service at least once a month. Those that operate in excess of 1200 miles per month are scheduled for more frequent check-ups. In view of the fact that the majority of their trucks operate pretty much on the same schedule month after month, the company has found it practicable to set up their inspection program on a 30-day basis in advance. This permits an even flow of inspection work through their shops month after month and eliminates peaks and valleys in their work program.

In their shops they have only skeleton day crews, and staggered hours so that the majority of employees will be there at night when the trucks are available without interference to their regular operations. When a truck must be kept in the shop for an extended period, it is replaced by a reserve truck of the same general

(TURN TO PAGE 115, PLEASE)

A MESSAGE TO THE TRADE

THERE has never been a time when Hygrade Products were such a tremendously important factor in the repair field as today.

The part they play in prolonging car life—conserving fuel—and in saving valuable man-hours in the shop is beyond calculation.

We regret that present conditions prevent us from meeting the requirements of our thousands of customers to the fullest extent. As you know, Uncle Sam comes first.

But we have not lost sight of that other obligation—to stand back of those loyal customers, who need us today more than ever.

We ask from them a continuation of the indulgence they have shown in the past. In return we give them the assurance that every effort is being made—through increased facilities and a realignment of our forces—to step up production to a point which will satisfy their most pressing needs.

HYGRADE PRODUCTS CO., INC.

35-35 Thirty-fifth Street
Long Island City, N. Y.

Replacement Parts
for Carburetors,
Fuel Pumps & Shocks.

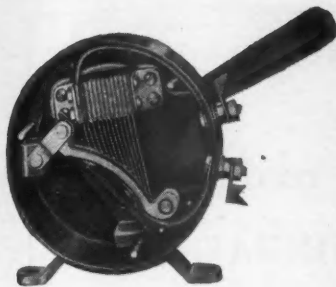
Speedometer Shaft-
ing and Casings.

Fuel Lines and
Fittings.



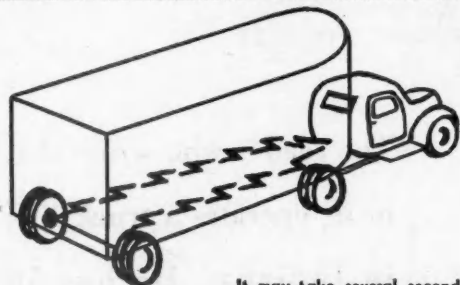
HYGRADE

Don't BUY Labor
-SELL it!



▲ Controller, with cover removed . . . operated from driver's seat . . . a simple, effortless, instantly effective brake control.

Controller is mounted conveniently on under side of steering wheel. ▼



It may take several seconds to actuate other type brakes . . . but electric power flows instantly, any distance, and assures instant braking.

At the present time the needs of our armed forces must be served first. However, if you are in the "essential" category, we can arrange to furnish Warner Electric Brakes.

CONTROLLED *Speed* ..AND *Power* OF BRAKING ACTION WITH WARNER ELECTRIC BRAKES

POSITIVE CONTROL

● Driver has complete control at all times. Any degree of braking power may be applied instantly, without effort. A rheostat in the controller regulates flow of current to brakes, thus governing the speed and power with which the trailer is stopped.

INSTANT BRAKE ACTION *No Time-Lag*

● With ideal road conditions, if your truck is traveling at a speed of 20 miles per hour, the distance required to stop is 30 feet. This distance is increased 29 feet each second of time-lag between the time the brake is applied and the time the vehicle stops. The further the rear wheels are from the driver's seat, the greater the time-lag, and the more distance needed for stopping.

With other type brakes there is serious time-lag but with WARNER Electric Brakes there is NO time-lag. The electric braking power, applied in any desired amount at the controller on steering wheel, travels instantly to the wheel brakes and, regardless of whether the rear wheels are 10 feet or 100 feet back from driver's seat, instant braking is certain . . . you can *depend* on a smooth 30-foot stop from a speed of 20 miles per hour.

Warner

ELECTRIC BRAKES

WARNER ELECTRIC BRAKE
BELoit

MANUFACTURING COMPANY
WISCONSIN, U. S. A.



GIVE YOUR UNITS MILITARY CARE...
KEEP OIL CLEAN



To keep your cars, trucks and buses on the road—do the same as the Army does with jeeps, tanks, trucks, half-tracks and other equipment. Ban dirty oil from the engines. Don't let dirt, dust, grit and sludge get in oil grind away at vital engine parts.

Every time a dip-stick shows dirt in the oil—change the oil and put in a new Purolator oil filter element at once. Purolators effectively guard against damage by dirty oil. Purolators remove dangerous impurities from the oil stream. Purolators keep oil clean—keep engines healthy.

It's both easy and inexpensive to keep oil clean with Purolators. Genuine Purolator replacement elements take but a few minutes to install—and list from \$1 and up.

Keep it clean with Purolator—the original oil filter—the filter of proved performance. Purolator Products, Inc., Newark, N. J.—founder and leader of the oil filter industry.

KEEP IT CLEAN
 with
PUROLATOR

DISPLAY



THIS SIGN

"I have been reading and using **COMMERCIAL CAR JOURNAL** for the past 8 years.

"The information contained in it each month is so valuable that I file the copies and frequently refer to copies several months old, in order to brush-up on some topic or find the address of one of the advertisers, whose product I need and cannot purchase locally."

—The reader who wrote that to us operates a truck line in Indiana. He has 50 trucks and tractors.

This gentleman is a good customer of **COMMERCIAL CAR JOURNAL** advertisers.

HOW HERTZ CONSERVES TRUCKING EQUIPMENT

(CONTINUED FROM PAGE 112)

type; which truck then will carry the customer's temporary side display sign. About one-twentieth of their total equipment is assigned to reserve and emergency service.

The company prefers all-around shop mechanics, but in some shops they also have specialized mechanics. These include specialists in electrical and battery work, welders, trimmers, body men, painters, etc. Most of their shops usually are equipped to handle all, or at least nearly all, repair and overhaul work. However, they have found it more economical to farm out some types of work. Practically all major accident repairs are sent out, but such repairs fortunately are rather few. In one city, for instance, with about 140 trucks they have had only one bad accident wreck in five years.

They have found it economical for different reasons at different shops to send out about 15 per cent of body repairs; 15 per cent of paint jobs; 50 per cent of electrical work; and 50 per cent of carburetor work. In their Chicago shop, as one example, they sent out cylinder boring, brake drum grinding, axle straightening, and metallizing.

Some of their shop managers have found it worth while to give special maintenance attention to certain small items. For instance, special attention to wheel alignments to conserve tires, since it is well known that the next hour after such an alignment the jolting of a wheel into a curb may again set the wheels and tires to fighting each other. Likewise, special attention to see that windshield wipers are working, as protection against the traffic hazards of an unexpected rainy day. A troublesome road failure call by a driver who couldn't change a flat tire because he was unable to loosen a rusted bolt that attached the spare wheel to the under side of his truck, caused the manager of one shop to start giving regular attention to all bolts and locks that attach spare wheels. Programs of this type that are developed in one shop and, being found practicable, become a company policy in all shops.

It might be mentioned also that all such extra wheels for their trucks are
(TURN TO PAGE 116, PLEASE)



The need for useful tools was never so great. Since you cannot, in many cases, purchase new products — you must conserve what you have. This book tells you how! Shortages of materials and labor mean that we must rely, as never before, on our tools and our own mechanical ingenuity.

Covered with dust and rust in the cellars, workshops and factories of America lie millions of dollars worth of potentially useful tools. Most of these could be repaired for a fraction of their original cost.

Individually and collectively, let's put these millions of dollars worth of discarded tools back to work. Prompt action is imperative. Delay now means costly deprivation later.

H. K. PORTER, INC., manufacturers of metal cutting tools since 1880, offer a practical booklet on the use, maintenance and repair of Porter HKP Cutters and other types of small tools. Send for your copy now. All Porter tools are precision built and like parts are interchangeable.



Army-Navy "E"
awarded to our Men
and Women for
Excellence in War
Production.

H. K. PORTER, INC.

416 Ashland St., Everett, Mass.

Without cost or obligation send me your booklet on the use, maintenance and repair of Porter HKP Cutters.

NAME

ADDRESS

HOW HERTZ CONSERVES TRUCKING EQUIPMENT

(CONTINUED FROM PAGE 115)

painted a conspicuous red, as a flash warning whenever a truck with a changed tire comes back to the shop, that this is a spare tire which must be shifted back immediately. Also, all tires are branded with the name Hertz and the number of the truck to which it is attached, to make certain that essential tires are used only on essential trucks, to insure prompt attention to repair of rationed tires and to aid in recapping or replacements when necessary. These tire records also have aided in the defense against tire theft; hence the branding of all tires is now a must requirement in all shops.

As a further tire conservation step, drivers are given special instructions and urged to immediately report all tire irregularities on their vehicles. As a part of the company shop maintenance program, tires are visually inspected each night as the vehicles are being washed. Tires are aired

HERTZ DRIVE/REPAIR STATIONS, INC.
DRIVER'S REQUEST REPORT

STATION NO. **A 8212**

CUSTOMER NAME _____ DATE _____
TO: REQUESTED BY (TYPE NAME) _____
NATURE OF REQUEST: _____

WHEELS: _____
TIRE CONDITION: _____
OIL: _____
FLUIDS: _____
BRAKES: _____
LIGHTS: _____
OTHER: _____

REPAIRS TO BE MADE: _____
ESTIMATE NO. _____

REMARKS: _____

These Hertz forms, discussed on the following page, expedite drivers' service requests

once a week, and alignment of wheels is checked every month. The apparent chief abuse to tires by customers is from truck overloading.

One precaution that is aiding in the protection of some tires is the use of reliners. This problem was called emphatically to company attention by an excessive number of inner tube failures in a fleet of 30 light trucks. Investigation revealed that these failures undoubtedly were because the tires of these trucks had been run either under-inflated or flat to the extent of loosening the cords. When run in this condition, the inner tubes had been damaged possibly

HERTZ DRIVE/REPAIR STATIONS, INC.
SHOP REPAIR ORDER

STATION NO. _____

CUSTOMER NAME _____ DATE _____
TO: REQUESTED BY (TYPE NAME) _____
NATURE OF REQUEST: _____

WHEELS: _____
TIRE CONDITION: _____
OIL: _____
FLUIDS: _____
BRAKES: _____
LIGHTS: _____
OTHER: _____

REPAIRS TO BE MADE: _____
ESTIMATE NO. _____

REMARKS: _____

after running only a comparatively few miles. Shop managers have been cautioned, when installing tire reliners, that their use is a poor excuse for a repair. However, under today's conditions, the company does not overlook any possibilities of getting more miles out of tires. They also

(TURN TO PAGE 118, PLEASE)



Champ-Items No. 949 Self-threading Oversize Drain Plugs for all popular makes of cars and trucks. Here is a real life-saver when drain plug is stripped or lost.

No. 949A— $\frac{1}{2}$ " Oversize for Chevrolet, Pontiac, Oldsmobile, and GMC truck.....List, 30c each

No. 949B— $\frac{3}{8}$ " Oversize for Buick, Hupmobile, and Packard.....

No. 949C— $\frac{1}{4}$ " Oversize for Oldsmobile, LaSalle and GMC truck

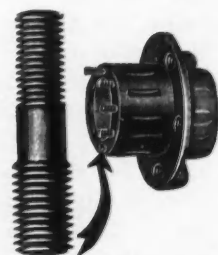
No. 949D— $\frac{3}{4}$ " Oversize for Ford, Studebaker, and Cadillac.....
(Pat. No. 2,257,441) List, 35c each



SHORT CUTS HELP SPEED THE WAY TO OUR V-DAY

Champ-Items Reconditioning Short Cuts are time savers in shops the world over. If it's a service problem, there's a Champ-Item to solve it.

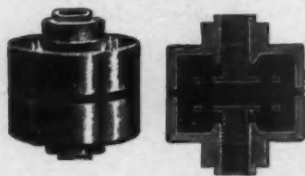
ORDER FROM YOUR JOBBER



Champ-Items No. 407 Oversize and Standard Rear Wheel Studs, for trucks — used when threads are stripped or stud is broken off; or when wheel flange holes and axle flange holes are worn. Made of high tensile strength steel. (See your Jobber for list of sizes).

List price.....20c to 35c each

Champ-Items No. 954 Improved Front Engine Mounting for Chevrolet 1935-42 Passenger cars and Sedan delivery trucks.



"Oil Proof" — Shielded so that oil and grease will not contact rubber cushion. No metal to metal contact. Will last life of car. Replaces Nos. 595219 and 365929, Chevrolet. Patent No. 2,241,026.

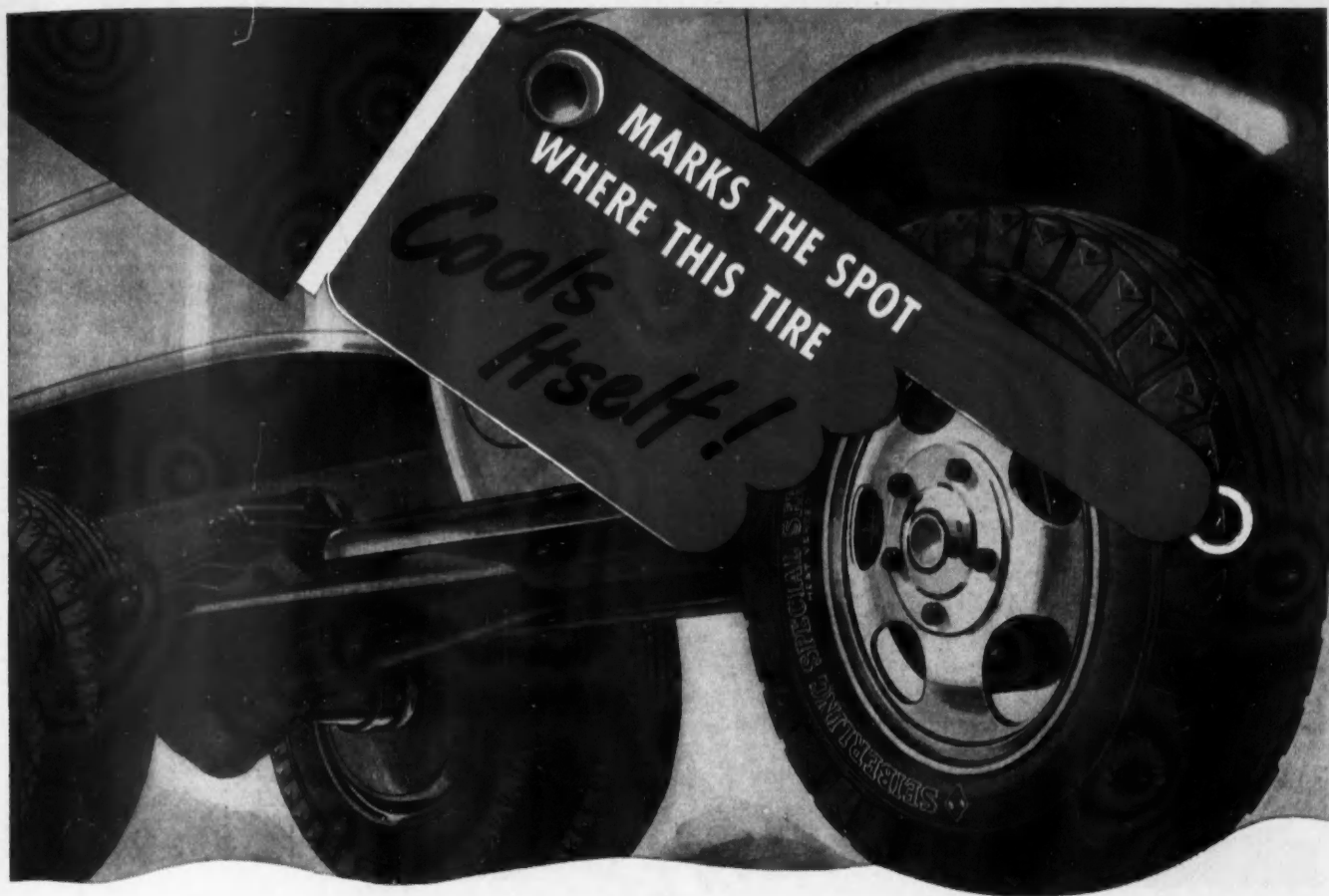
List. \$1.50 each

CHAMP-ITEMS, Inc.

6191 MAPLE AVE., ST. LOUIS, MO.

Oversize and Standard Rear Wheel Studs for Trucks... Self-threading Oversize Crankcase Drain Plugs and Gaskets for All Cars... Window Regulator Repair Kits... Self-threading Screw Assemblies...

...Replacement Door Lock Springs... Motor Supports and Shock Absorbers... Greasemats... Replacement Speedometer Cable Assemblies...



Here's a *different* truck and bus tire! Through Heat-Vents in its shoulders it exhales heat and inhales air to *cool itself*! On thousands of military vehicles, on trucks and buses in essential service this cooler-running Heat-Vented Seiberling is helping to conserve rubber for Uncle Sam because it does not develop the excessive internal heat that causes so many tires to fail prematurely.

Because it runs cooler, this tire will give YOU many extra miles of service, too. So take your next ration certificate to your nearest Seiberling Dealer. But should you find him temporarily out of Heat-Vented Seiberlings in your size, please be patient. The demand for Seiberling tires is so great it is

difficult to keep dealers stocked with all sizes.

In any case, always ask *first* for Heat-Vented Seiberlings. Now or after the war, they're the cooler-running tires you *need* for the longest possible mileage! •

Now's the time TO PUT THE TIRES YOU HAVE IN THE CARE OF A QUALIFIED EXPERT!

Before it's too late, place those precious tires you now have in the care of your nearby Seiberling Dealer, a recognized *tire expert*. Rubber conservation in his hands is no hit-and-miss proposition, for he offers you a comprehensive, proved-in-practice program that has helped truck and bus fleets everywhere s-t-r-e-t-c-h their tire mileage to record figures. See your Seiberling man *soon*!

SEIBERLING

Heat-Vented  **TRUCK AND BUS TIRES**

Also manufacturers of Pontons • Reconnaissance Boats • Parts for Gas Masks • Bullet-Seal Tubes and Military Tires for our Armed Forces

SEIBERLING ON RUBBER IS LIKE STERLING ON SILVER

HOW HERTZ CONSERVES TRUCKING EQUIPMENT

(CONTINUED FROM PAGE 116)

suggested that when it is found advisable to install reliners, that this be done under the direction of a tire expert so that the reliner will be properly cemented into the casing and made as smooth as possible to avoid tube damage.

A check-up of company road-failure reports indicate that a consider-

able percentage of them have been due to tire trouble. For instance, a fairly recent weekly report from their Philadelphia shop with 275 vehicles shows four out of the 14 reported road failures were so caused. Other causes were: broken rear axle, carburetor float stuck, broken fan belt, spark plug, steer-bracket broken, stuck in mud, shifting fork broken, motor backfiring, oil pump not working.

A tabulation of all company road failures over a considerable period of

time also shows tires the leading cause, with a total 1381 reports. Other items were: fuel system 1127, electrical 1124, battery 1100, engine 713, cooling system 298, brakes 297.

The company realizes that road failures are considered the "bugaboo" of all modes of transportation, and that many of them are of a type difficult or impossible to prevent. The types that they are trying to control are those which result mostly from neglected and careless maintenance inspection. Included in this type are those from broken fan belts, broken and leaking radiator hoses, loose wheels, dirty spark plugs, dirty carburetor screens, loose and dirty battery terminals, and ignition wires.

To aid in taking care of road-failure calls, all of their leased or for-rent trucks carry on their instrument boards a telephone number for the driver to call for road service. Here a service call ticket in duplicate is filled out as the call comes in. When a mechanic leaves to service the call his time out is stamped with automatic time recorder on the ticket. Later his time in is also stamped and the mechanic's report is added to the ticket.

Another important shop form in recording maintenance activities is the Driver's Request Report. This form must be filled out whenever a driver requests any mechanical adjustment or repair of his truck; or whenever a Hertz employee observes and reports the need of a special truck adjustment or repair, in addition to follow-up of regular PM inspections. Each such driver's request is serially numbered and must be followed and individually accounted for, to help in systematizing the shop work and to insure the continuous high quality of customer maintenance service which Hertz is selling.

The driver must give a complete description of how the unit acts when giving trouble. It thus becomes a shop diagnosis of the adjustment or repair needed, and not just a guess.

After a repair job has been completed and the driver has driven the vehicle one day, he is asked to approve the repairs as satisfactory and OK the original copy of the repair request. If the driver does so, the job report is filed in the office pouch where are assembled forms showing all shop work on this vehicle.

If the driver does not approve the
(TURN TO PAGE 120, PLEASE)



use
NIEHOFF
for

- ★ QUICKER STARTING
- ★ SMOOTHER ACCELERATION
- ★ BETTER GAS MILEAGE
- ★ LONGER SERVICE

In maintaining time-table deliveries of food, munitions and other vital war materials at Victory driving speeds, efficient, dependable ignition parts are vitally essential.

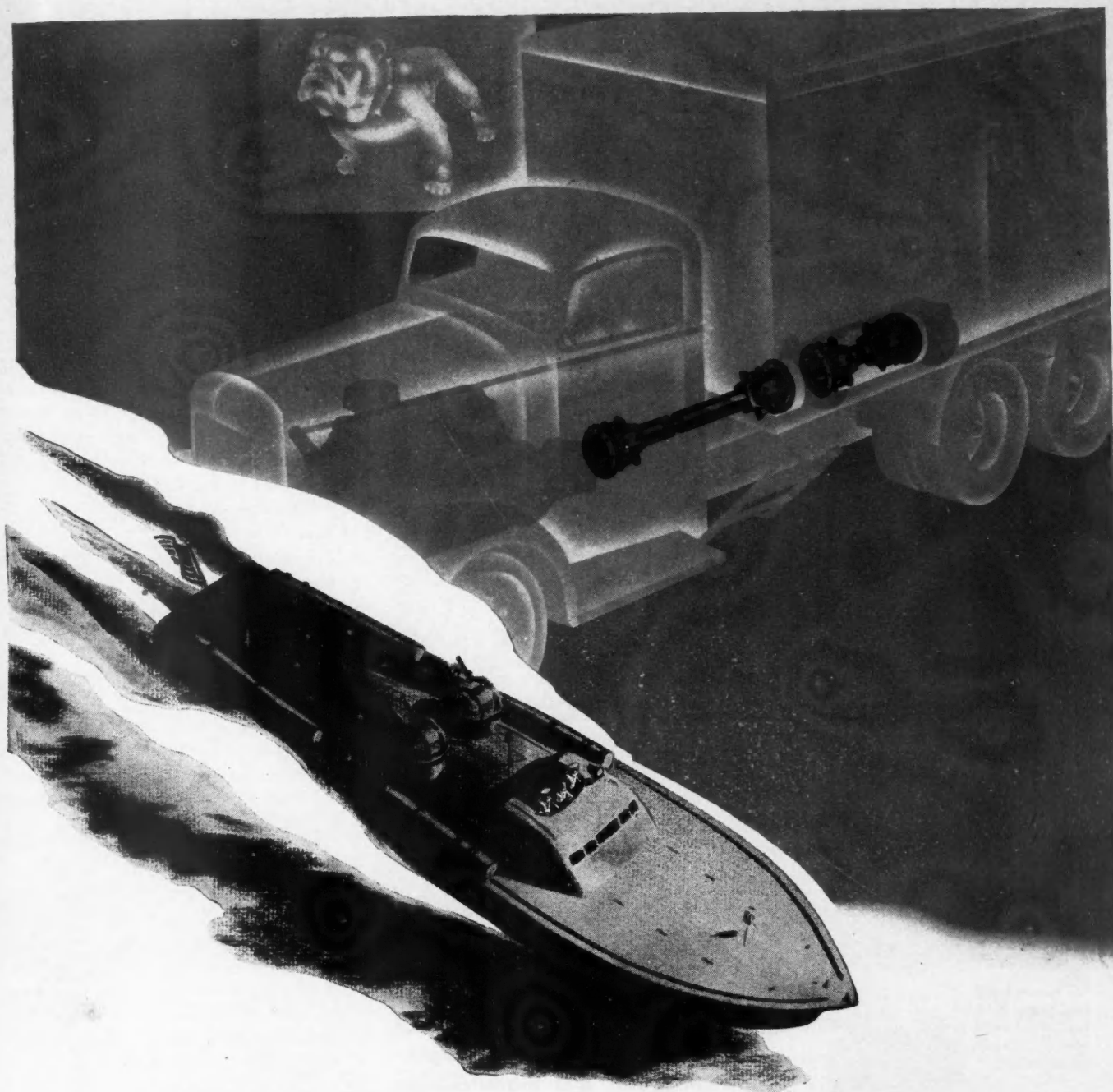
Because NIEHOFF Approved Quality Products meet exacting wartime requirements they are playing an important part in assisting fleet operators to keep fleets moving, reduce maintenance, cut costs and conserve critical materials.

A complete line of NIEHOFF Approved Quality Ignition Parts is available through a national network of NIEHOFF Jobbers.

C. E. NIEHOFF & CO.
4925 Lawrence Ave., Chicago, Ill.
Branch: 1342 S. Flower St., Los Angeles, Calif.



CARE WILL SAVE YOUR TRUCK



Spicer Universal Joints—

okay for peacetime Mack . . . now deliver the mighty PT *smack!*

175 horsepower in the Mack . . . or 1350 horsepower in each of the three motors for the swift PT . . . it's all the same to the standard Spicer Needle-Bearing Universal Joints. So good, so strong, so ample in overload capacities are these Spicer units, that **WITHOUT CHANGE** they were immediately adapted to PT Boat production. And this Spicer versatility will assure quick, efficient conversion to peacetime needs when the war is won. Spicer Manufacturing Corporation, Toledo, Ohio.



BROWN-LIFE CLUTCHES AND TRANSMISSIONS • SALISBURY FRONT AND REAR AXLES

SPICER UNIVERSAL JOINTS • PARISH FRAMES, STAMPINGS

HOW HERTZ CONSERVES TRUCKING EQUIPMENT

(CONTINUED FROM PAGE 118)

repair, then the same Driver Request Report is sent back to the shop superintendent as a Second Request, including more details on the repair needs. If the job still is not approved by the driver, then a new Third Request is written out, with the original request sheet clipped to it. There are but few third requests, and it is con-

sidered that any such fault in the truck has reached the "nuisance to customer class," and that all third requests should be brought to the attention of the branch manager.

It should be explained also that when a driver's request form is being originally written out by the shop deskman, who receives the driver's complaint, he also writes out the top part of a companion Shop Repair Order. That is, the top part of this companion shop order is filled out as the third and fourth carbon sheets

under the original shorter-length driver request. The companion shop repair order is given the same serial number, in duplicate, as the original driver request.

This plan has been proving very effective in helping to systematize company shop records; check up on the work of shop mechanics assigned to repair jobs; correct many small vehicle faults previous to maintenance inspections and thus lessen road failures; and, above all else, stimulate the good will and safe driving habits of all drivers by proving to them that the company shop management is really anxious to follow through on all of their complaints and keep their vehicles in the best possible mechanical condition.

There is an individual weekly report form for each truck. It includes driver and customer name, truck number, speedometer reading, etc. The form also has space for filling in the various charge items and thus becomes a weekly statement of account for the vehicle to be submitted to the Customer.

Based on all shop maintenance services which are rendered during the year to each Hertz vehicle, the company maintains for each vehicle an individual Service Record Card. This card is of standard 8½ by 11 file size and was designed about two years ago especially for this service, to simplify and make more accessible for quick reference the records for each individual unit. Part of the card is divided into twelve different horizontal sections, one section for each month of the truck or tractor maintenance year. When the details of the maintenance history has been filled in, the card will show at a glance the dates and mileages at which the respective A, B, and C Preventive Maintenance inspections were made, the shop orders pertaining to these inspections, the dates of all driver request reports and companion shop repair orders pertaining to the unit.

END

(Please resume your reading on P. 58)

Scott Heads Wolf's Head Oil

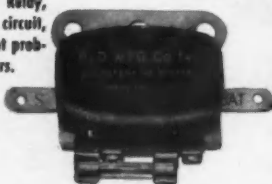
A. W. Scott has been elected president and secretary of Wolf's Head Oil Refining Co., Inc., Oil City, Pa. The directors also named the following officers: E. W. Chase, C. H. Ellingwood and J. B. Mitchell, vice-presidents; E. E. Bellen, treasurer; and W. J. Hogan, assistant secretary.

**America's Leading Jobbers
and SERVICE STATIONS
DO NOT keep SABOTEURS
on their shelves!**




1 Generator Cut-outs. Patented construction features. Universal in application.

2 Patented Double-Fused Light Relay, fused for each circuit, solves the light problem for all cars.



3 Universal Voltage Regulator. The only two-step voltage regulator needed to give complete service.



Any replacement part that does not render a long life of efficient service is today a liability in the material conservation program. That's why America's leading jobbers, dealers, service stations and mechanics stock only genuine P. & D. Replacement Parts. In addition to assuring the users of peak performance and long life, these parts aid materially in the conservation program because P. & D. manufactures only one complete quality line for all three types of automotive vehicles—trucks, buses and passenger cars. Thus inventory investment is minimized and mechanics are enabled to uphold gross business.

Our catalog tells the complete story. If you do not have a copy, write for one today. It is free.



P. & D. MANUFACTURING COMPANY, Inc.
STARTING LIGHTING IGNITION
LONG ISLAND CITY NEW YORK
REPLACEMENT PARTS

P. & D. Manufactures ONE complete quality line. Only the finest materials and workmanship obtainable are employed.
YOU CAN NOT PURCHASE ANY FINER QUALITY

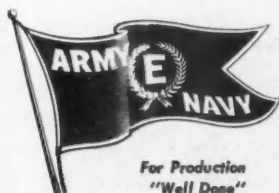


1. Unsung heroes of the Merchant Marine team up with the United States Navy to deliver products of the home front to the fighting fronts! Teamwork in motorizing the United States Army (a job in which The Timken-Detroit Axle Company played a vital part) — teamwork in getting trucks, tanks, guns, bullets, bombs and supplies to the fighting fronts — has played an important role in United Nations' victories to date.



2. H. M. O'Neill, President of Anchor Motor Freight, New York, and Anchor Motor Freight, Inc. of Michigan and Delaware, says, "Teamwork is vital in transportation, too. Our organization is working as a team—drivers, mechanics and management! Our 'conveyor-belt' trailers often take vital aircraft assemblies right off sub-contractors' production lines and transport them direct to manufacturers' assembly lines, frequently without crating."

HERE ARE SOME TIPS ON TEAMWORK FOR YOU



You'll get more mileage from trucks, trailers and buses, with fewer delays and breakdowns, if everyone in your organization has a clearcut understanding of his responsibilities. Timken's new vehicle conservation program gives you this and, in addition, provides driving helps and complete data for maintenance men. Just the thing to help you bring old employees up-to-date—to train new employees quickly and efficiently. Mail the coupon for a free showing of Timken's new full-color, sound slide film, "TEAMWORK," or for a complete set of axle maintenance aids. There is no charge or obligation.

TIMKEN AXLES

THE TIMKEN-DETROIT AXLE CO., DETROIT, MICHIGAN
WISCONSIN AXLE DIVISION, OSHKOSH, WISCONSIN

THE TIMKEN-DETROIT AXLE CO.
200 Clark Ave., Detroit, Mich.

We are interested in seeing the film "Teamwork" ☐
Please send driver and maintenance aids ☐

Name _____

(Number of Employees) _____

Address _____

City & State _____

COLD WELDING TECHNIQUE EXPLAINED

(CONTINUED FROM PAGE 51)

28 thread, $\frac{3}{8}$ —24 thread sizes; No. 36, 5/32, 13/64, 5/16-in. drills; and the following dies, 6/32, 10/32, $\frac{1}{4}$ —28 thread and $\frac{3}{8}$ —24 thread. In addition to the above the mechanic should have an assortment of chisels and the usual supply of such hand tools as hacksaw, hammers, files, etc.

It is important that a close inspec-

tion of any part to be cold welded be made to determine the exact position and number of cracks. Thorough cleaning in a degreasing tank is recommended.

The ends of each crack must be drilled to prevent further development of the crack. The drilled hole is tapped and the special rod is screwed into it and cut off. Each crack is drilled and tapped at specified spacings for its entire length and the special rod is inserted in such a manner that each stud interlocks the one next

to it and each stud is then peened.

A quantity of sealing compound is then circulated through the cooling system. As a final inspection, hot or boiling water is circulated through the cooling system. This will make it possible to locate any leaks that are not visible to the naked eye.

General Procedure

The following instructions outline the proper procedure to follow for specific cold welding repairs. The pins referred to in these instructions are made of a special-purpose, commercially available rod. Each pin should be dipped in sealing compound before installing.

1. First cut a channel the width of diameter of metal to be used. This channel should be at least $\frac{1}{16}$ in. deep, but the depth will depend largely on the thickness of the metal which is to be repaired. (See Fig. 1.) Channeling is necessary only in combustion chamber cracks.

2. Be sure the crack is as near the center of channel as possible, so it may be drilled squarely through.

3. In channeling for "in-lay" through a valve seat, it is necessary to cut deep enough to allow for several valve grinding jobs.

a. Drill as nearly perpendicular to the valve face as possible and tap out for pin.

b. With a thin flat or a small three-cornered file, file the side walls of the channel perfectly smooth and undercut slightly to produce a dovetail effect.

It is essential that the side wall of this channel be free from scratches or cuts from the tap, as a future valve grinding job may run into one of these and leave a bad line on the valve seat. The smoother the channel walls and corners, the better the job will look when finished. After completing repairs, circulate sealing compound through cooling system.

L-Head Valve Seat Repair

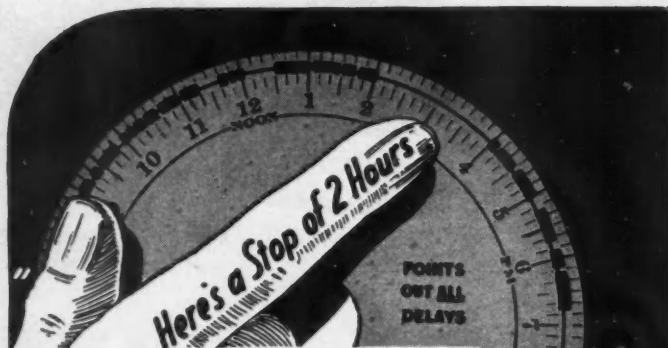
1. Determine the ends of the crack.

2. Saw through the valve seat with hacksaw for a channel, the width of diameter of metal used. Be sure the crack is as near the center as possible, and cut out with coping chisel of proper width.

3. Work from both ends toward center of crack to prevent chipping at cylinders.

(TURN TO PAGE 124, PLEASE)

"LET NO
TRUCK
WASTE
TIME
Now!"



HOW TO PREVENT
Costly Delays

WHEN TRUCKS ARE VITAL TO NATIONAL DEFENSE

Do the Obvious Thing: Put on Servis Recorders

(Just two screws and two minutes per Recorder — that's all you need)

• In times of peace this little instrument saved millions of dollars for truck owners.

Now the emphasis is on TIME, and the money saved is merely a by-product.

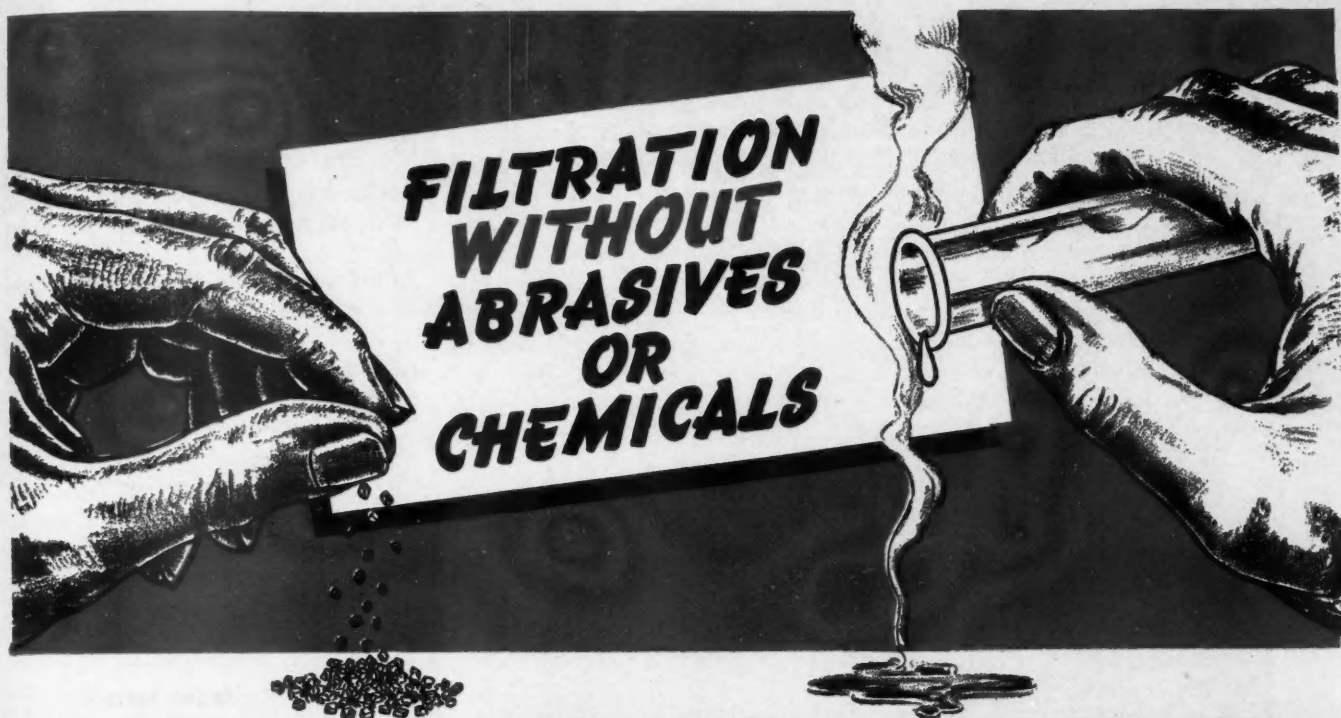
Trucks Are Getting Scarce!

All right. If you can do 6 trucks' work with only 5, then you have given an extra truck to your country. You can do it! Send for free booklet: "Ten Ways of Getting More Work Out of Motor Trucks." THE SERVICE RECORDER CO., 1375 Euclid Avenue, Cleveland, Ohio.



The Servis Recorder

Shows Busy and Idle Time... All Day



WARTIME TRANSPORTATION DEMANDS CLEAN, FULL-BODIED OIL!



There's *nothing* in a WIX Filterefil but sludge-hungry filtering efficiency . . . no chemicals to break down the additives in today's heavy duty, compounded lubricating oils . . . no grit or mineral substances to get into the oil lines and score cylinder walls, pistons and bearings. WIX Filterefils are simply and frankly the sound means of maintaining *visibly* clean motor oil at minimum cost and for longer periods.

WIX Filterefils are engineered to do a superlative filtering job on ALL lubricating oils. There's a size and type designed to precisely suit whatever filter your equipment carries. Whether it's a truck, bus, tractor or passenger car—enjoy the lubricating insurance, longer oil life and rock-bottom economy WIX Filterefils provide! YES . . . you can get them TODAY!

MAIL THIS COUPON NOW!

ACCESSORIES CORPORATION
GASTONIA, N. C.

Gentlemen: We are interested in refills for

Filters (GIVE MANUFACTURER'S NUMBER). Please send us quotations at once.

NAME

ADDRESS

CITY

STATE

ACCESSORIES CORPORATION, GASTONIA, N. C.

WAREHOUSES: NEW YORK • CHICAGO • KANSAS CITY, MO. • MINNEAPOLIS • LOS ANGELES • SAN FRANCISCO
CANADIAN FACTORY: WIX ACCESSORIES CORPORATION LTD., 161 BAY STREET, TORONTO, ONTARIO

COLD WELDING TECHNIQUE EXPLAINED

(CONTINUED FROM PAGE 122)

4. Dip each pin in sealing compound before installing.

5. Drill and install pin No. 1. (See Fig. 2.)

6. Drill $\frac{1}{8}$ in. hole from a point in line above, following the crack through the valve-chamber wall into pin No. 1; cut $\frac{1}{8}$ in. pin about 1 in. long; put some sealing compound in

the hole; insert pin No. 2 and pin down with square-ended punch. Cut off any surplus metal which may stick up in bottom of channel.

7. Install pin No. 3 in cylinder wall, then install pin No. 4 using the same procedure as with pin No. 2.

8. Drill and tap for pin No. 5 and proceed with No. 6, 7, 8, etc. The number of pins required depends on the length of the crack, i.e., if it is very short, pin No. 1 may catch the end and is placed immediately under No. 5, making No. 2 unnecessary.

No. 8 could be No. 2, and No. 5 would be the third and last one.

9. Be sure the pins are cut high enough to allow plenty of metal to fill the channel. An insufficient amount makes a bad looking job, whereas a surplus may be easily cut off.

10. In peening, always use a light hammer or a special purpose pneumatic hammer, as heavy blows will shatter the threads in the cast iron and the job will be loose.

If the valve seat has an insert, remove it; channel from the top over the pin as above. If the crack has opened, to loosen the insert it will be necessary to install an oversize. After completing repairs, circulate sealing compound through cooling system.

Chevrolet Cylinder Heads

On some models a crack may occur close to the wall or rise, and the repair can be made with one pin, as shown on the short side in Fig. 3. If the crack occurs near the center of the port and extends down through valve port, trace this for the end, using a reverse or dental mirror.

1. Dip each pin in sealing compound before installing.

2. Channel through the valve seat and back to the end of crack.

3. Drill $\frac{5}{32}$ in. hole from in the channel above, at a point where the drill will come through the end of the crack in the port underneath.

4. Tap and install pin No. 1, as shown on long side in Fig. 3.

5. Drill for pin No. 2 through the valve seat into pin No. 1, and install pin No. 2 as per valve seat instructions for Fig. 2.

6. Install pin No. 3.

If the crack runs too far for 3 pins, continue with additional pins. On the short side in the Chevrolet head the crack runs straight down the wall of the valve port. On this operation, drill down the wall past the end of the crack. It is impossible to install this pin at right angle with the valve seat, but as the combustion chamber wall comes up behind it the angle is unnecessary. After completing repairs, circulate sealing compound through cooling system.

Freeze and Strain Cracks

Freeze cracks and strain cracks located near and parallel to the top of blocks have a tendency to open, (see



Here's What You're Fighting For...

...your way of life! Every man interprets it a little differently, but to us all it means a car, a radio, a refrigerator; the right to those things that make our daily life pleasanter, more convenient, more exciting. We pledge you this—after the last shot is fired, Weatherhead will again help build these products for you as well as many new ones born in the war.

Look Ahead with 

Weatherhead

THE WEATHERHEAD COMPANY, CLEVELAND, OHIO
Manufacturers of vital parts for the automotive, aviation,
refrigeration and other key industries.

Branch Offices: Detroit, Los Angeles, New York and St. Louis

Fig. 4), as a result of the pull of cylinder head bolts or studs. In some types, the crack is caused by excessive pull on a stud and the crack opens up around the corner and into the exhaust port.

1. Dip each pin in sealing compound before installing.

2. Pin the end of the crack and make a normal repair at the exhaust port.

3. Ream out the stud hole to bottom of water jacket, whether on the valve side or on the other.

4. Drill and tap for a long stud; this will transfer the pull from the top to the bottom of the block.

In some blocks, the expansion plugs can be removed, showing in the bottom just where to drill. If the expansion plugs are not located so this may be done, drill a hole to see through, tap it, and install a pipe plug when finished.

On rare occasions, almost the entire end is broken out of a block by excessive pull on the studs, causing a crack between all of the end studs and at the corner of the block. As the cylinder in these jobs is very close to the end of the block, it has been found advisable to double sleeve. This is done as follows:

1. Use a sleeve that is large enough to bore for the use of sleeve required. Bore out and install this sleeve, and pin around both top and bottom by drilling as nearly as possible at right angles through the sleeve and into both top and bottom. Pin with four to six pins of 3/16 in. special rod.

2. The broken end of the block may be anchored to this sleeve, by tapping through from outside and stay-bolting.

3. Bore out to the desired size and install regular sleeve.

Some blocks have considerable space between the valve and cylinder, and it has been found that, in sleeving, the old wall has been completely broken away from that top and the overhang caused by this will vibrate. It will then be necessary to stay-bolt this overhang to a point below, at a point directly between the valves and as near the cylinder wall as possible, or it may be double sleeved as described above.

After completing repairs, circulate sealing compound through cooling system.

END

(Please resume your reading on P. 52)

Stamina TO DO THE JOB FOR WHICH IT IS DESIGNED . . .

GALION

BODIES and HYDRAULIC HOISTS are also "built to take it" on both the Fighting and Construction Fronts

Boulder Dam Type
Rock Body is popular
for heavy duty construction work. " "



THE GALION ALLSTEEL BODY CO., GALION, OHIO, U. S. A.

WARTIME BATTERY MAINTENANCE

(CONTINUED FROM PAGE 43)

helps to prevent deterioration which might loosen or distort the battery container, causing undue vibration and wear of the plates and separators.

2. If battery carrier or compartment shows signs of corrosion, remove battery and clean carrier with

a bicarbonate of soda solution (one lb. to one gal. water). Then rinse with clear water, dry and repaint carrier or compartment.

Installation of Battery

1. Battery should rest firmly and level in the cradle, and be fastened securely in place by hold-down clamps.

2. Avoid excessive tightening of clamps as this may distort or break the battery container.

3. Cables should be long enough to reach battery terminal posts without causing unnecessary strain. When cables are too taut, posts and sealing compound may break loose and result in leakage of electrolyte.

Connections

1. Battery connections should always be free from corrosion and tight. Loose and corroded terminals result in the lowering of voltage which prevents quick starting and proper operation of electrical accessories.

2. If battery posts and terminals are corroded, remove connections and clean. They can be scraped or cleaned with bicarbonate of soda solution (one lb. to one gal. water).

3. Apply a thin coating of grease or anti-corrosion compound to posts and terminals to prevent corrosion.

4. Connect and fasten securely in place.

Cable Repairs

1. If battery cables are frayed or oil soaked, or terminals are badly corroded, sometimes they can be reconditioned to prolong the time before actual replacement becomes necessary.

2. The first step is to clean all the dirt and grease from the cable, then remove the old terminal and also those portions of the insulation which are no longer in good condition. Next straighten out the cable and cover bare sections of cable with friction tape, built up to level of original insulation. Then slide a piece of insulating loom over the taped part of the cable, leaving exposed the end to which a new terminal is soldered. Solder the new terminal on the end of the cable and the job is complete.

3. If it is necessary to remove a section of the cable, making it too short, it can be saved and used on another vehicle that requires a shorter battery cable.

4. Never throw away a battery cable that cannot be repaired; it should be disposed of through the proper scrap channels so that the copper can be salvaged.

5. Ground straps, as a general rule, are more difficult to recondition than cables, since they are in most

(TURN TO PAGE 128, PLEASE)

a NEW and More Thorough Way of



CONTROLLING TIRE WEAR!

Check Wheel-Roll With the Truck

In Motion and Under Load!

Since tire wear takes place only when a truck is moving, and principally when it is under load, it is obviously necessary to check wheel-roll with the truck loaded and in motion, in order to discover whether misalignment defects are injuring the tires.

This becomes evident when it is remembered that the most common misalignment defects result from faults in the chassis mechanism, such as broken or mismatched springs, bent spindles, bent axles, etc. These get in their deadly work only when the vehicle is in motion, and become most serious when the vehicle is under load.

To discover what these chassis defects are requires the use of a Micro-Linor—an instrument especially designed to check wheel-roll while the vehicle is under way. By means of its patented "Tracer Wheel" which runs alongside of the wheel being tested, it shows exactly what is happening to the tires when the vehicle is traveling on the road.

Different! Does Not Require a Specialist!

It requires no tedious study of complicated instructions in order to check wheel-roll with the Micro-Linor. Nor is it necessary to employ a highly skilled mechanic for this purpose. Anyone with only a rudimentary knowledge of wheel alignment can operate the Micro-Linor without the slightest difficulty—because all of the information needed in checking wheel-roll is printed right on the Micro-Linor's one simple dial.

In use by leading fleet owners throughout the country, the Micro-Linor has proved its worth far beyond its purchase price in the increased tire mileage that it has made possible. The saving in tire-cost alone, to say nothing of major chassis repair bills which it eliminates, pays for it in full in a remarkably short time. Checks all wheels—trailers as well as trucks. Why not investigate?

Micro-Linor Set No. TML-220 fits truck, bus and passenger wheels with 24" to 48" tires. Circular on request.

TESTING APPARATUS, INC.

1629 W. Fort

Detroit, Mich.



MICRO-LINOR

Patented "Tracer-Wheel" Principle

SEND for Complete Information

Stop
Tire Wear
Before It
Starts!

Meet the MADHATTERS

and 10 Other Reasons for Belt Failure
Between the Covers of DAYTON'S BELT SERVICE MANUAL



The Madhatters is merely our name for pulleys in the same drive which have different widths and angles. They are a comical looking team to an artist, but what they do to fan belt life isn't slightly funny. The remedy for the Madhatters is prescribed in Dayton's Belt Service Manual. Here, too, you will find on easy-to-read pages a concise diagnosis and remedy for each of the 11 specific conditions which cause needless belt failure. It took Dayton engineers 30 years of field study to accumulate the experience which is presented in this belt conservation manual. You will want to have it today as never before, so write for it—also information about our FREE FLEET SURVEY of Fan Belts and Accessory Drives. No obligation.

THE DAYTON RUBBER MFG. CO.
DAYTON, OHIO

Export Division
DAYTON RUBBER EXPORT CORPORATION
38 Pearl Street, New York, N. Y. U. S. A.



**THROW YOUR SCRAP
INTO THE FIGHT!**

BUY WAR BONDS
AND SAVINGS STAMPS

Dayton

THE GREATEST NAME IN FAN BELTS

85% Original Equipment on all American Makes of Cars
WORLD'S LARGEST MANUFACTURER OF V-BELTS

WARTIME BATTERY MAINTENANCE

(CONTINUED FROM PAGE 126)

cases of a flat braided construction. However, if too many of the braided strands have not been eaten away by corrosion, it is possible to do a satisfactory job of reconditioning.

6. First clean off all corrosion by washing in clean ammonia or a saturated solution of sodium bicarbonate.

7. If the terminal is badly damaged, a new one should be installed.

8. After the terminal has been cleaned, or a new terminal installed, the strap should be stretched to restore it to its original shape and then squeezed in a vise to hold it in shape. Solder can now be flowed over the entire strap, allowing it to penetrate well into the braids. This method will restore the strap to its original condition and it will give plenty of service.

9. Ground straps that cannot be

repaired should be turned over to proper salvage authorities.

10. Operators who do not wish to repair their own battery cables, may avail themselves of a factory reconditioning service, offered by several manufacturers of battery cables. They will accept used battery cables in which not more than 10 per cent of the copper strands have been severed, thoroughly recondition the cable and guarantee that the cable is in serviceable condition when it is returned.

NO ABSENTEEISM

MARQUETTE
REGISTERED U.S. PAT. OFFICE
A.C. ARC WELDERS



Absence of vital workers . . . or failure of hard pressed equipment are perplexing problems of wartime fleet operators. Both add up to the same thing . . . NO TRANSPORTATION!

But you can bank on Marquette A. C. Arc Welders not to be AWOL when they are needed most to "keep 'em rolling." Extra sturdy construction—all asbestos insulation—no moving parts to wear out—no dials or nuisance gadgets to get out of order are some of the features built into these versatile machines that assure long continuous service and superb welding performance for bumper-to-bumper truck maintenance and repair.

10 DAY DELIVERY on five outstanding models, 150 to 400 amperes capacity. **LOW INITIAL COST—LOW UP-KEEP—LOW OPERATING COST—INSTANTANEOUS HEAT SELECTION—AUTOMATIC VOLTAGE CONTROL—NO "MAGNETIC BLOW"—LOW IDLING COST—FAST, SIMPLE OPERATION—COMPLETELY EQUIPPED.**

Send for free, 24 page, Illustrated booklet.

MARQUETTE MFG. CO., INC., MINNEAPOLIS, MINN.

prompt delivery!

MARQUETTE
REG. U.S. PAT. OFF.

A.C. ARC WELDERS

Adding Water

1. Add water to bring electrolyte level $\frac{3}{8}$ in. above the top of the plates.

2. When electrolyte level is too low, separators and plates may be damaged due to drying or warping of separator tops.

3. When the level is too high, battery has a tendency to spray, causing short circuits and damage to wiring and battery carrier.

4. Only distilled water or water of known purity should be added to electrolyte. Impurities present in most natural water can cause severe injury to the plates, decrease efficiency and materially shorten the life of a battery.

5. Battery manufacturers will analyze water, and report if it is safe for use in a battery. Most of them offer this service free of charge to their customers.

6. In proper operation, a battery will require little or no water in a month, or 1,000 miles of driving. The need for adding any considerable amount of water in the battery in this period of service points immediately to excessive generator output. Check voltage regulator operation.

7. Nothing but water should be added to the battery. The addition of special powders or solutions often is injurious; they may cause corrosive or rotting action on the plates.

8. Water should never be added to a battery and the battery left standing in freezing temperature. The water in this case will freeze the same as though it was outside the battery.

9. All cells should require approximately the same amount of water at refill. If one cell requires more
(TURN TO PAGE 130, PLEASE)



★ I'm a Smoke Eater ★ from 'way back

Many years ago, I drove a Ward LaFrance pumper to many a fire. It never let us down. Neither has the Ward LaFrance equipment we've bought since I became Chief. Today you've got to have an urgent need for fire apparatus to be able to get it—but since we've been buying Ward LaFrance pumpers exclusively for years, we can depend on the ones we have, for the duration and then some. I'm glad to hear Ward LaFrance is turning out big Tank-Recovery Wrecker units and fire trucks for the armed forces. That means our boys are getting the kind of equipment it takes to win a war.

P. S. Ward LaFrance is a name to remember after this war is won. It stands for special

trucks, engineered and built for the job to be done. No matter what your requirements, you'll probably find custom-engineered and built trucks are the economical, efficient, profitable kind of vehicle to buy. It's none too soon to make preliminary inquiries concerning your future requirements. Our experienced engineers will welcome your letter.

WARD LAFRANCE TRUCK DIVISION



ELMIRA, NEW YORK



WARD LAFRANCE

WARTIME BATTERY MAINTENANCE

(CONTINUED FROM PAGE 128)

water than the others, examine the battery for evidence of a leak.

10. If one cell requires less water than the others, examine for evidence of gassing on charge and check the gravity reading with the other cells. If these are out of line, the battery should be removed for a complete examination of the cell.

11. The amount of water added is an indication of the charge and discharge rate of a battery. In batteries connected in parallel this is a point to be carefully observed. If one battery takes more water than the other, promptly check all switches and connections for trouble.

Specific Gravity Test

1. Specific gravity of electrolyte should be tested at frequent intervals with a reliable hydrometer.

2. Do not take readings immediately after adding water.

3. Hydrometers are usually calibrated to read accurately only when the electrolyte is at a certain specified temperature. Standards commonly used are 60 deg. and 80 deg. Fahr. When taking readings at temperature other than the specified standard, it is necessary to make corrections. For every 10 deg. the temperature is above the standard, 0.004 must be added to the observed reading. For every 10 deg. below the standard, 0.004 must be subtracted from the observed reading.

4. Specific gravity readings without corrections for temperature are practically meaningless.

5. All cells will have an approximate gravity reading of 1.285 when fully charged, and 1.150 when completely discharged.

6. If gravity reading is lower than 1.225, remove battery for recharge. Charge until the specific gravity of the electrolyte reaches 1.275 to 1.300.

7. To prevent freezing in cool weather, test the battery frequently and see that the specific gravity is kept up to at least 1.250. A discharged battery will freeze at a little below the freezing point of water.

Voltage Test

1. If battery gravity is above 1.225, check the voltage of each cell with a low reading voltmeter (0 to 10 volts) under operating load by cranking the engine with ignition off.

2. The individual cell voltage should not drop below 1.5 volts per cell at 60 deg. Fahr. or above. The difference between cell voltages should not be more than 0.2 volts.

3. Batteries that do not meet these specifications should be opened for inspection. The separators may be found to be worn thin in places, or broken, or split. If the plates in such a battery are in good condition, the separators may be replaced with new ones and the battery recharged.

4. If the positive plates are badly buckled or the positive grids are broken, the battery is not in condition for further service.

Storage of Idle Batteries

1. When a truck is to be withdrawn from service for an indefinite or long period of time, the battery (TURN TO PAGE 132, PLEASE)



Eberhard

HINGES
LOCK HANDLES
LATCHES
DOOR IRONS
DOOR CONTROLS
SEAT IRONS
LOCK HANDLES
SEAT PEDESTALS
REFRIGERATOR
LOCKS
PANEL DOOR
LOCKS
VAN BODY
LOCKS
SLIDING DOOR
LOCKS
LADDER HOLDERS
ETC.



This war of flashing speed involves thousands upon thousands of motorized vehicles.

And in each vehicle are numerous small but important parts whose functions are often taken for granted. Were any to fail, however, their importance would be more sincerely appreciated.

Doubtless in recognition of this fact, Government standards are so high as to give the greatest possible assurance that they will not fail.

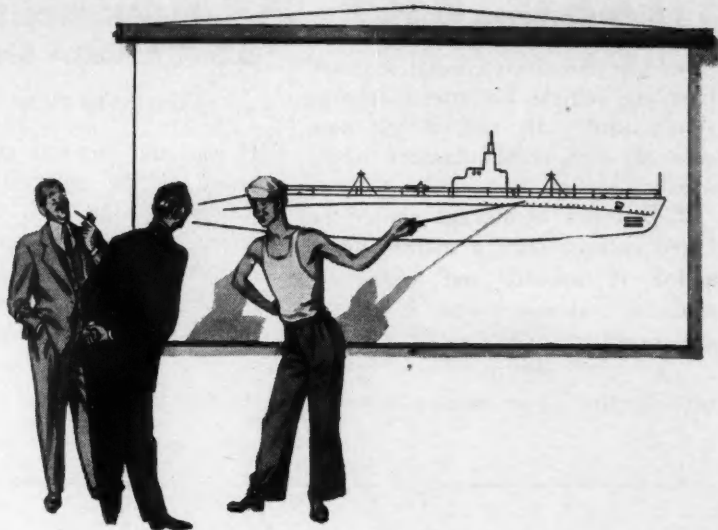
Here at Eberhard there is a feeling of gratification in having furnished numerous essential parts for various combat vehicles; and to have equipped an outstanding percentage of the trucks that are backing up the war effort on the home front.

Obviously, we are largely on a war production schedule but standard hardware items are still available, and promptly, to those who can furnish suitable priorities.

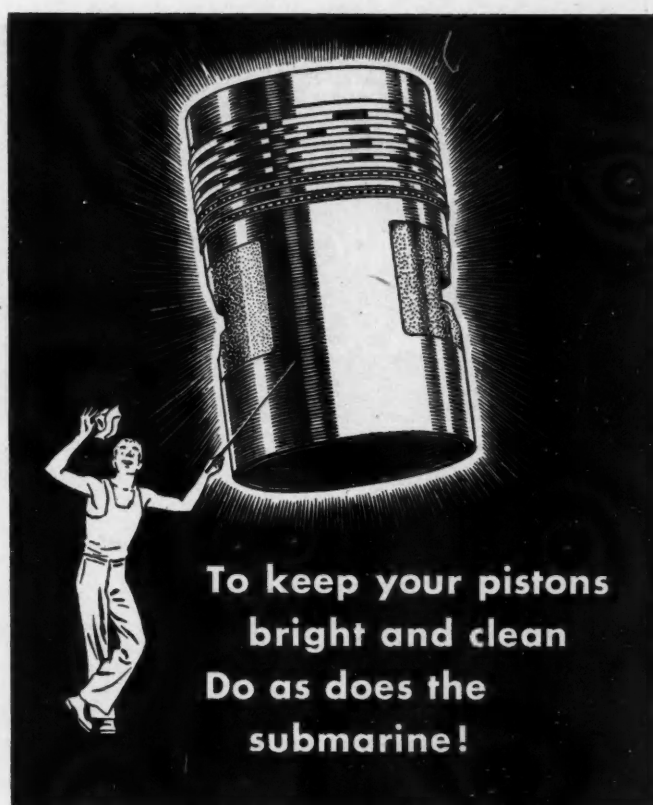
EBERHARD *Long Run*
TRUCK BODY FITTINGS

EBERHARD MANUFACTURING CO.
Division of the Eastern Malleable Iron Company • CLEVELAND, OHIO

**This submarine of
the U. S. fleet
Must keep its Diesels
running sweet . . .**



**Never must its
pistons' hum
Be slowed by varnish
or by gum . . .**



**To keep your pistons
bright and clean
Do as does the
submarine!**

. . . use RPM DELO, used by the United States Navy to lubricate the powerful Diesels in our submarines and other warships.

These drawings, from actual photographs in our files, reveal the difference between two pistons, each run 846 hours in a test. One was lubricated with the finest straight mineral oil available, yet its rings were stuck with gum and the skirt was varnished.

The other, lubricated by RPM DELO, was protected by the non-corrosive, anti-oxidant properties that make "RPM" the world's finest Diesel oil. Put RPM DELO to the test in your own Diesels. You, too, will see how it retards ring-sticking and varnishing.



**ORDER RPM DELO
FOR YOUR DIESELS**

RPM DELO is marketed under the following names:

**RPM DELO • Caltex RPM DELO • Kyso RPM DELO
Signal RPM DELO • Imperial-RPM DELO • Sohio RPM DELO
CONCENTRATE**

**Ask your Diesel engine manufacturer or distributor for the
RPM DELO supplier in your vicinity**

STANDARD OIL COMPANY OF CALIFORNIA

(CONTINUED FROM PAGE 130)

should be disconnected and removed from the vehicle. Batteries discharge slowly while idle and, if not kept charged, irreparable damage might result.

2. Batteries in storage should be tested at least once a month, water added if needed and recharged whenever necessary to keep the gravity up to 1.250.

END

(Please resume your reading on P. 44)

RESTRICTIONS LIMIT U.S.-CANADA SHORT CUT

(CONTINUED FROM PAGE 60)

If war and non-war goods were allowed to be shipped together, it would expedite such freight movements. Under the present rules, the non-war goods have to be transported to the East via Cleveland.

In this present total war, there also is some question where the line is drawn between war and non-war

goods. Many of the latter, such as food, automotive spare parts and farm equipment, may be essential to the winning of the war. However, only implements of war and their components, materiel for the armed forces and equipment and supplies for war production plants are rated war goods under the interpretation of the Canadian regulations now in force.

Open top trucks and trailers also are taboo for the trans-Ontario route when miscellaneous freight is being hauled. Such freight must be in a closed truck or trailer in order to seal it in bond for the trip across Ontario. However, such bulk items as machinery, castings and drums can be shipped in open top equipment because it is easy to check the contents at a glance.

Trucking authorities in Michigan believe the trans-Ontario route is not carrying anywhere near the potential quantity of freight going east because of the stipulation for 100 per cent war goods. Less than 1000 U. S. trucks used the Canadian short cut in the first four months after the ban was lifted Oct. 2, 1942. This compares with a total of 283 trucks operated by one common carrier in a typical two-week period between Michigan cities and the East.

The breakdown of truck trips across Canada for the first four months follows:

	Buffalo- Detroit	Detroit- Buffalo	Buffalo- Port Huron	Port Huron- Buffalo	Total
October	79	61	3	10	153
November	91	72	36	33	232
December	140	124	22	21	307
January	116	111	4	6	237
Total	426	368	65	70	929

Severe winter operating conditions undoubtedly were responsible for the decline in truck trips from December to January. Unusually heavy snowfalls and a shortage of road clearing equipment and manpower hampered truck movements over the Ontario highways during January. This same condition also was true in northern New York State.

The two-week survey of operations of one typical common carrier transporting freight between Detroit and the East showed 56 trucks operating between Detroit and New England, 58 vehicles between Detroit and New York and 179 trips between Detroit and Buffalo. These 283 truck move-

(TURN TO PAGE 134, PLEASE)



It's high time to get rid of inefficient spark plugs! The kind that commit "mechanical treason" in a car, truck or tractor.

With gas restrictions getting tougher—every precious drop counts now! Use good plugs—plugs that fire hot and efficiently, converting *all* fuel into *power*—Edison plugs!

When new plugs are needed install the best—Edison's! This helps to conserve war-winning materials and manpower.



Edison SPARK PLUGS

EDISON-SPLITDORF CORP., WEST ORANGE, N. J.

GAS RATIONING PROVES THE VALUE of the CARTER CERAMIC FUEL FILTER...

When you are trying to make every gallon of gasoline deliver all the miles possible — efficient protection against unnecessary carburetor trouble is a sound investment.

The CARTER CERAMIC FUEL FILTER is more popular today than ever before — for it assures a steady flow of fuel free from dirt, lint, and all harmful foreign matter.

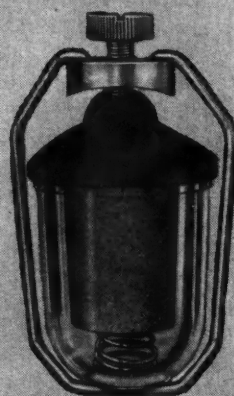
Order from your Carter distributor or jobber.



CARBURETOR
Registered in U. S. Patent Office
PRODUCTS OF PRECISION



THE CARTER *CERAMIC* FUEL FILTER



*A specially prepared clay — similar to that used in the filtering of drugs — an unusually efficient filtering substance.

CARTER CARBURETOR CORPORATION • St. Louis, Missouri
DIVISION OF AMERICAN CAR AND FOUNDRY COMPANY

RESTRICTIONS LIMIT U.S.-CANADA SHORT CUT

(CONTINUED FROM PAGE 132)

ments carried 4,766,000 lb. of freight, of which 31 per cent was classified as war materiel. Therefore, nearly 70 per cent of the freight had to be transported east via Cleveland, with consequent extra use of tires, gasoline and vehicles. Among the largest common carriers using both routes, one has to send 50 per cent of its

trucks via Cleveland, while another directs approximately one-third of its vehicles the longer way.

The longer route through Ohio also requires extra manpower in a time when good truck drivers are scarce. The 360-mile trip necessitates a change of drivers at Cleveland, while on the 260-mile haul across Ontario only one driver is needed. Loaded trucks sometimes remain idle at Detroit terminals for lack of over-the-road drivers.

Canadian customs officials have

been extremely cooperative in making it possible for trucks with war product shipments to clear the border with minimum of red tape and time lost. Truck line officials report that only 10 to 15 min. is required to go through the U. S. and Canadian customs authorities at the port of entry. The cost of trip permits is \$1 each for a minimum of 350 permits, or \$10 for an occasional permit for the irregular operator.

However, there are some other difficulties that are inherent in operating in another country. These include fuel, tires and repairs while enroute. All U. S. trucks covering the route must carry enough gasoline with them going into Canada for the entire trip. They cannot purchase any fuel in Ontario. The same applies to tires, so sufficient spares must be taken along to take care of any contingency. Breakdowns and accidents also present a problem. Truck repair parts are more expensive in Canada and in the case of certain makes they are difficult to obtain. One common carrier rejected a plan to use the trans-Ontario route due to the uncertainty of emergency repairs. Another company has arranged with three repair shops along the route to make any necessary emergency repairs on its trucks. It also keeps certain spare parts, tires in bond at these repair shops. A third carrier sends its own wrecker into Canada either to make the necessary repairs at the roadside or to haul the disabled vehicle back to the U. S. for repairs.

When the first U. S. trucks loaded with war goods crossed the Ambassador Bridge from Detroit to Windsor last October marking the opening of the trans-Ontario route, Joseph O. Goodman, manager of the Automotive Transport Association of Ontario, said at the attendant ceremonies that the opening of this truck route followed the free international movement of all other forms of transportation—rail, air and waterway—between the U. S. and Canada. He hoped the barrier would remain down after the war. But with the present restrictions on non-war shipments, his hopes appear unlikely to be fulfilled.

END

(Please resume your reading on P.61)

Send For This Free CURTIS Maintenance CHECK-CHART

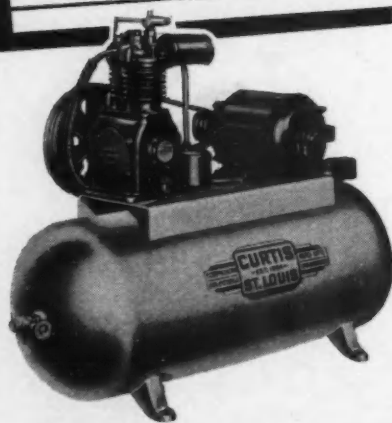
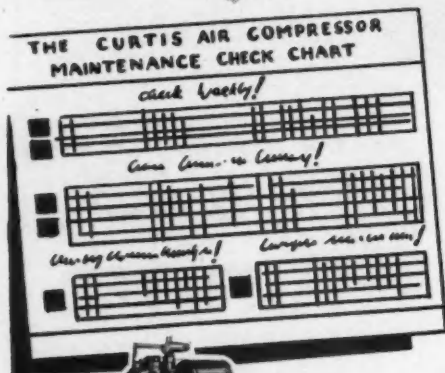
and Prolong the
Life of Your
Air Compressors

★ To give you a convenient, easy-to-read, easy-to-check, list of maintenance and servicing suggestions, Curtis offers this free CHECK-CHART to all compressor users.

Proper, systematic care of air compressors has never been so important as it is today, for not only must your compressor work harder, but it must last longer, too.

Here, on a handy size card — to hang near your unit — are complete service tips on proper INSTALLATION, LUBRICATION, TESTING, SERVICING, ELECTRICAL MAINTENANCE, and CLEANING.

To assure a continuous, adequate, dependable supply of air at all times, send the coupon today for your free copy of the CURTIS Maintenance Check-Chart.



CURTIS

ST. LOUIS
NEW YORK
CHICAGO
PORTLAND
SAN FRANCISCO



CURTIS PNEUMATIC MACHINERY DIVISION OF CURTIS MANUFACTURING COMPANY
1970 Kienlen Avenue, St. Louis, Missouri

● Please send me free copy of your check-chart on proper Air Compressor care and maintenance.

Name.....
Address.....
City..... State.....

the First
OF ITS KIND



AND STILL
the Best
OF ITS KIND

K-D Super-Power Plastic Reflector, 3" red or amber lens; exceptional visibility. Oval mounting No. 333, or bracket mounting No. 334. Lists 90c

● Here's a sturdy plastic reflector built to give efficient, economical service. Powerful rays flashing back from its specially designed 3" plastic lens are far more visible than a glass reflector. It is smack-proof, too! Blows that would shatter the stoutest glass bounce harmlessly off its resilient face. And for extra ruggedness and safety, it's set deep in a protective housing of 18-gauge metal. Like all K-D equipment, it exceeds S.A.E., I.E.S. and I.C.C. standards.

K-D pioneered the use of plastics in truck and bus lighting over six years ago, with the advent of this highly efficient reflector. First of its kind, it set a new standard of perfection in safety lighting, as did many

of the other important advances in this field that are traceable to the skill and foresight of K-D engineers.

Today, as always, in this complete quality line, you'll find the *right* light—for the *right* job—at the *right* price. Talk to Lighting Headquarters—your K-D jobber.

THE K-D LAMP COMPANY, CINCINNATI, OHIO



In addition to safety lighting for essential transportation at home, K-D engineers are co-operating with army technicians in the design of specialized safety lighting for fighting equipment.

K-D LIGHTING

*The Right Light
for the Right job*



Combination Stop and Rear Lamp. "De-lite" model 3½" Tri-flex refracting lens. Lists \$2.10.



Armored Clearance Lamp. Blows glance off the heavy metal housing. Fresnel-type red or amber lens. Lists \$1.05.



Flat Surface Mounting Lamp. A marker lamp of great brilliance. Exceptional shallow depth. Easily kept within limits of rub rail. Lists 58c.



Combination Clearance and Marker Lamp. Flat or curved mounting. Red or amber lens. No. 517. Lists \$1.10 and up.

JEFFERS ASSURES TIRES FOR TRUCKS

(CONTINUED FROM PAGE 61)

rising rapidly through the ranks to general manager at the comparatively youthful age of 40. In October, 1937, roly poly, versatile William M. Jeffers was made President. In that job, to which he anxiously awaits return after he does his rubber chore, he has done much to build up the present efficiency and prestige of that

pioneer rail carrier. He can be of serious business mien when that is necessary to the job. Socially, he can easily shift to mimicry and showmanship to the amusement of a fun-loving crowd.

It was his intrenched railroad background that caused the truck operators and makers, as well as automotive interests generally to look askance at the appointment of Jeffers as Rubber Czar on Sept. 15, 1942, by WPB Chairman Donald M. Nelson. Fear was felt that Jeffers

would, either consciously or unconsciously, short change them on rubber supplies. They freely admit today that Jeffers has been a square shooter and has kept them rolling on rubber. He says he's going to keep them rolling and have more rubber to do it with.

"Where are you going to get the rubber?" taunted a skeptic.

"None of your damn business," retorted Mr. Jeffers.

There are facts and figures to support Mr. Jeffers' assurance that he and his comparatively small staff are licking their job. Here are some of the highlights of their accomplishments, made possible by cooperation with industry and government officials:

In production at present are approximately 85,000 gross tons of rubber being made from alcohol. By July 1 this volume will be increased by an additional 140,000 tons, making a total 225,000 tons produced from alcohol. In production from petroleum are about 35,000 tons of rubber.

Roughly speaking, virtually the entire program will be completed by the end of the current calendar year. This will mean an annual productive capacity of 813,000 tons, including both neoprene and Butyl. The largest part of the production will be Buna-S, the rubber produced from any butadiene, whether from alcohol or petroleum. Rated capacity now building includes 705,000 tons of Buna-S, 40,000 tons of neoprene and 68,000 tons of Butyl, the total of 813,000 tons representing 78 per cent of the Baruch Committee recommendations, of 1,037,000 tons, which were cut 22 per cent.

Contingent upon no upset in the program there will be 275,000 tons of synthetic rubber produced in 1943. The stockpile at the end of the present year, which will be the lowest point, will be 145,000 tons of crude and synthetic rubber. The Baruch report said that 100,000 tons would be the dangerous minimum. Hence there will be a sizable margin of 45,000 above the danger point.

Imports likely will be larger than estimates made in the report. The report estimated 1943 imports at 35,000 tons, but indications are that they will aggregate more than 100,000 tons. Rubber imports come from Central and South America, Africa,

(TURN TO PAGE 138, PLEASE)



*NOW...
speed up
tire inspection
and repairs
with a...*

BISHMAN No. 425 Foot Operated HYDRAULIC TIRE SPREADER

If you act quickly, you can get one of these newest type hydraulic tire spreaders — for fast, efficient tire inspections and repairs. **No priority required.**

Full size — handles all tires from 4½ to 12-inch heavy duty truck and bus tires. Adjustable arm makes it possible to completely invert tires to the bead — for making repairs and skiving.

TIME-SAVING... MAN-SAVING! Quick, easy foot operation for both lifting and lowering — with the built-in 2-ton HYDRAULIC Quality Jack which also permits spreading of tire to any desired degree up to full width. Speeds up work on OPA inspections.

Can be used as portable or permanent unit. Large base with holes for fastening.

Biggest surprise of all is the price — only \$24.50 list for this big Hydraulic Spreader. (Pacific Coast and Canadian prices slightly higher.)

THERE'S GOOD PROFIT FOR YOU in the use of this essential equipment for tire inspection. Saves time and labor, increases profits. Order from your Jobber today — or write to

BISHMAN MANUFACTURING COMPANY, 1101 South Second Street
MINNEAPOLIS, MINN.

LIST
\$24⁵⁰



Stops Balking in Delivery Trucks, Too



Whiz MOTOR RYTHM

steps up engine performance... cuts down costly overhauls



To save time, money and equipment, outstanding truck, cab and bus fleets use WHIZ MOTOR RYTHM regularly:

1. To stop bucking due to carbon, sludge and varnish.
2. To cut engine maintenance and overhaul costs.
3. To save labor.
4. To save gas and oil.
5. To make equipment last longer.

WHIZ MOTOR RYTHM is a liquid chemical developed by Hollingshead's modern research. You put it in the gasoline and oil supply of engines.

Automatically—chemically—it cleans out carbon, sludge and varnish deposits that are constantly forming around valves, piston heads, piston ring grooves, spark plugs, and in crankcases.

With MOTOR RYTHM, engines run smoother. Equipment lasts longer. Wasteful down time and overhauls are reduced. By official car tests, MOTOR RYTHM can save up to 33% of gas, 26% of motor oil consumption.

Put WHIZ MOTOR RYTHM in your engine regularly to get more from your equipment and manpower. R. M. Hollingshead Corp., Camden, New Jersey; Toronto, Canada.

Hollingshead
LEADER IN MAINTENANCE CHEMICALS

Write for information on other WHIZ fleet reconditioning and maintenance products:

HO-ZOF DEGREASING COMPOUND • BRAKE FLUID • RUST PREVENTIVES • COOLING SYSTEM CLEANERS • SHOCK ABSORBER FLUID

JEFFERS ASSURES TIRES FOR TRUCKS

(CONTINUED FROM PAGE 136)

Ceylon and Mexico. Reclaimed capacity was built up in 1922-24 when the Stevenson Act fixed the raw rubber export price at the prohibitive cost of \$1 per lb. and now totals 350,000 tons annually. There are more than 800,000 tons of scrap rubber or over two years' supply in the stockpile and more is coming in

weekly. This scrap rubber is used principally for making Grade F Camelback for passenger cars. These cars now on the highway will be taken care of for the next two years by reclaimed rubber. In consequence, there will be no drag on new rubber to keep passenger cars operating.

From this factual record the conclusion is drawn that it is obvious, when it is considered America's annual normal needs of rubber are about 500,000 to 600,000 tons, most of it for passenger cars, that there

will be ample synthetic rubber for all trucks for both civilian and military uses as well as for buses.

There has been raised the question of the quality of synthetic rubber tires for heavy duty service. Rubber Director Jeffers does not share this concern. On the contrary, he is satisfied as the result of tests that synthetic rubber tires for trucks will prove to be equally as serviceable as are tires made from natural rubber. Any doubt regarding the endurance of synthetic tires for trucks has been so nearly dissolved generally that they are being given the most rugged test of all—their ability to stand up on rough riding jeep over stony and pathless terrain on mountainside and plain.

END

(Please resume your reading on P. 62)

ALUMINUM AND POST-WAR VEHICLES

(CONTINUED FROM PAGE 59)

lighter, parts throughout the car. It will mean that very few of the old parts can be used unless they are made lighter.

There are a number of light-weight materials available, such as aluminum, magnesium, plastics and plywood, which can be used, but the use of aluminum in a great many of the metal parts would result in the greatest saving in weight. The use of a pound of aluminum will result in a saving of a pound in weight when the aluminum replaces cast iron. In the average car 500 lbs. of aluminum could be used in practical applications to obtain a weight saving of 500 lbs. By use of economical design for the steel parts, it should be possible to reduce the weight still farther. Having designed the car to weigh 2100 lbs. instead of 3000 lbs., the result should be smaller, lighter parts such as engines, transmissions, axles, brakes, tires and wheels.

Along with the changes and developments being made in other materials, there have been also many improvements in the aluminum and aluminum alloys available. There will be new and stronger aluminum alloys for highly stressed parts, but parts like cylinder heads, crankcase and cylinder blocks, flywheel housings, and transmission cases, which are usually made of cast iron, can be

(TURN TO PAGE 140, PLEASE)



KEEP 'EM ROLLING!

HYPRESSURE JENNY
Removes Grease, Dirt
and Mud Faster, Better,
Cheaper, from:

- Motor Blocks
- Chassis
- Crank Cases
- Transmissions
- Bodies
- Tank Trucks
- Parts — Tools
- Equipment
- Grease Pits
- Runways
- Machinery
- Floors — Walls
- Windows

Many hundreds of fleet owners have found that truck lay-up time can be materially reduced, repairs facilitated, dead-weight dirt controlled, and clean-up problems solved by use of The Hypressure Jenny steam cleaner.

HYPRESSURE JENNY sprays, under pressure, a highly atomized mixture of steam, hot water and cleaning compound that completely removes dirt and grease 8 to 10 times faster than hand methods. Features include self starting, instant steaming, portability, simplicity of operation, welded construction, highest efficiency. Write for full information.

HYPRESSURE JENNY DIVISION OF

HOMESTEAD VALVE MFG. CO.

P. O. BOX 90 • • • CORAOPOLIS • • • PENNSYLVANIA



Meehanite Foundries

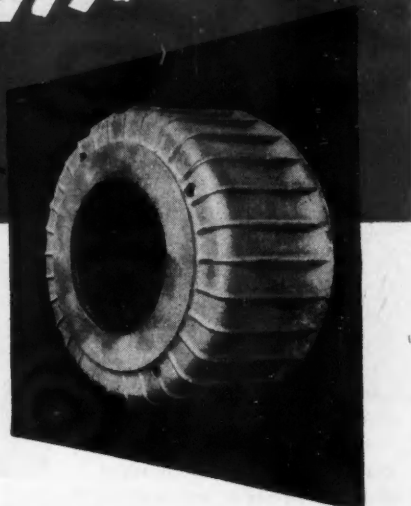
Allentown, Pa.
Traylor Engineering Company
 Ansonia, Conn.
Farrel-Birmingham Co., Inc.
 Bridgewater, Mass.
The Henry Perkins Co.
 Brooklyn, New York
E. W. Bliss Company
 Buffalo, N. Y.
Pohlman Foundry Co., Inc.
 Charleston, W. Va.
Kanawha Manufacturing Co.
 Chattanooga, Tenn.
Ross-Meehan Foundries
 Chicago, Ill.
Greenlee Foundry Company
 Cincinnati, Ohio
Cincinnati Grinders Incorporated
The Cincinnati Milling Machine Co.
 Cleveland, Ohio
Fulton Foundry & Machine Co.
 Denver, Colo.
The Stearns-Roger Mfg. Co.
 Detroit, Mich.
Atlas Foundry Co.
 Flint, Mich.
General Foundry & Mfg. Company
 Hamilton, Ohio
The Hamilton Foundry & Machine Co.
 Hamilton, Ontario, Canada
Otis-Fensom Elevator Company
 Irvington, N. J.
Barnett Foundry & Machine Co.
 Jeannette, Pa.
Elliott Company
 Lewisburg, Tenn.
Marshall Stove Company
 Los Angeles, Calif.
Kinney Iron Works
 Milwaukee, Wis.
Koehring Company
 Mt. Vernon, O., Grove City, Pa.
Cooper-Bessemer Corporation
 New Rochelle, N. Y.
Meehanite Metal Corporation
 New York, N. Y.
The American Brake Shoe & Foundry Co.
 Oakland, Calif.
Vulcan Foundry Company
 Orillia, Canada
E. Long, Ltd.
 Philadelphia, Pa.
H. W. Butterworth & Sons Co.
Florence Pipe Foundry & Machine Co.,
 (R. D. Wood Company, Selling Agents)
 Phillipsburg, N. J.
Warren Foundry & Pipe Corp.
 Pittsburgh, Pa.
Rosedale Foundry & Machine Co.
 Rochester, N. Y.
American Laundry Machinery Co.
 St. Louis, Mo.
Banner Iron Works
 St. Paul, Minn.
Valley Iron Works
 London, Eng.
The International Meehanite Metal Co., Ltd.
 Waterloo, N. S. W.
Australian Meehanite Metal Co., Ltd.
 Johannesburg, South Africa
Meehanite Metal Co. (S.A.) (Pty.) Ltd.

*you'll get
better braking-
longer lining life-*

when your
brake drums are
made of—

Meehanite

A unique combination of "built-in" physical properties gives Meehanite brake drums longer life, greater effectiveness. Illustrated here is a special design used on Fruehauf trailers.



Today, the inherent qualities of Meehanite brake drums are the very advantages most sought-for by operators everywhere. Long life, smooth sure action, freedom from maintenance, dependability are "musts" today—and because of the special metallurgical structure of Meehanite brake drum metal these qualities are assured: longer life of lining and drums, greater resistance to braking heat, smooth braking action, ample strength to withstand

high pressures, rigidity to prevent distortion, toughness to resist wear.

Proved by hundreds of thousands of miles in commercial service, Meehanite brake drums will help you maintain highest efficiency, reduce maintenance "time-out", provide better braking at all times—in other words, help you "keep 'em rolling"!

MEEHANITE RESEARCH INSTITUTE, New Rochelle, N. Y.

MEEHANITE

SEND FOR BOOKLET

Facts you should know about
brake drum metals. Free. Ask
for booklet "BRAKE DRUMS."



ALUMINUM AND POST-WAR VEHICLES

(CONTINUED FROM PAGE 138)

made of secondary alloys. These secondary alloys will be much different than the grade of secondary alloys used before the war, both in analysis and quality. The entire secondary aluminum alloy market has changed. Industries using aluminum have learned the advantages of keeping their aluminum scrap clean and free

from contamination. This results in a much higher grade secondary alloy with better physical properties.

One of the best units to start reducing in weight is the engine which contains a number of heavy castings. It should be possible to reduce the weight of the average cast-iron engine from approximately 7.5 lbs. per hp. to 5.2 lbs. per hp., or a total reduction in weight of 200 to 225 lbs. for an engine used in a 3000-lb. car. Practically all this saving would be accomplished by substituting secondary

aluminum castings for iron castings. This change should be possible with very little, if any, increase in cost per hp. The cost of secondary aluminum will be low; the cost of making an aluminum casting should be no greater than the cost of making the same casting of iron, and the cost of machining the aluminum casting will be less than the cost of machining iron castings. The aluminum engine will require cylinder sleeves and valve seats, but it will be possible to increase the power output of the aluminum engine over the power output of the iron engine which should more than offset this and any other small extra cost.

There is practically no data on the cost of aluminum castings made in continuous-run production foundries, where the production quantities compare with the large production cast-iron foundries, but the operations involved when making both kinds of castings are very similar. The aluminum foundries in operation today are jobbing foundries, and new foundries will have to be built or old ones re-equipped for continuous-run type of work. New smelters will also have to be built to take care of the increase in the secondary aluminum available and required. Any automobile company planning to make aluminum engines would no doubt convert its own cast-iron foundries into aluminum foundries or use the aluminum foundries built for the war effort. The tonnage of aluminum available will justify these changes and, if made, they will result in the greatest economy for the car manufacturer.

THIS CHART WILL HELP YOU KEEP 'EM ROLLING

IMPERIAL WARTIME SUGGESTIONS ON BRASS FITTINGS

3 HELPS to make your fitting job easier and faster. This chart gives you the answers to the most common fitting problems. It's a handy reference for the shop.

BASIC DATA ON FITTINGS—Familiarize yourself with the basic data on fittings. This chart gives you the answers to the most common fitting problems. It's a handy reference for the shop.

EMERGENCY FITTING MAKE-UP CHART—This chart gives you the answers to the most common fitting problems. It's a handy reference for the shop.

EQUIVALENT FITTING INDEX CHART—This chart gives you the answers to the most common fitting problems. It's a handy reference for the shop.

IMPERIAL S.A.T. PLASTIC FITTINGS—This chart gives you the answers to the most common fitting problems. It's a handy reference for the shop.

IMPERIAL BRASS MANUFACTURING CO. CHICAGO, ILL. U. S. A.

● A tube fitting can become a mighty important item on a repair job during these war times when your Jobber may not be able to supply just what you need when you need it.

However, there is more than one way to skin a cat! And similarly there is usually more than one way to handle a tubing connection job. So Imperial has brought out a chart headed "Wartime Suggestions on Brass Fittings" that will give you some good ideas on what to do when you need a fitting that is not readily available.

The chart begins with the presentation of such basic fitting data as how to recognize various types of fittings, how the different types of fittings and tubing are assembled and how to determine fitting sizes. Two color illustrations show clearly the different types of fitting joints. This feature makes the chart especially valuable to anyone who has not had much experience with tubing connection work.

THE IMPERIAL BRASS MFG. COMPANY, 1209 W. Harrison St., Chicago, Ill.

IMPERIAL Automotive Products

TUBE FITTINGS ★ FLEXIBLE TUBING ★ TUBING SERVICE TOOLS
BATTERY TESTERS ★ FREEZETESTERS ★ WELDING OUTFITS

Order from Your Jobber

With this basic information on fittings as a foundation, the chart then goes on to present three methods of relieving wartime fitting shortages. These methods are: (1) by the use of equivalent fittings; (2) by building up substitutes for missing fittings through the use of two or more other fittings; and (3) by the use of plastic fittings.

If your repair work calls for replacing tube couplings you will find this chart very helpful.

Ask your Jobber for a copy or write to Imperial for one.

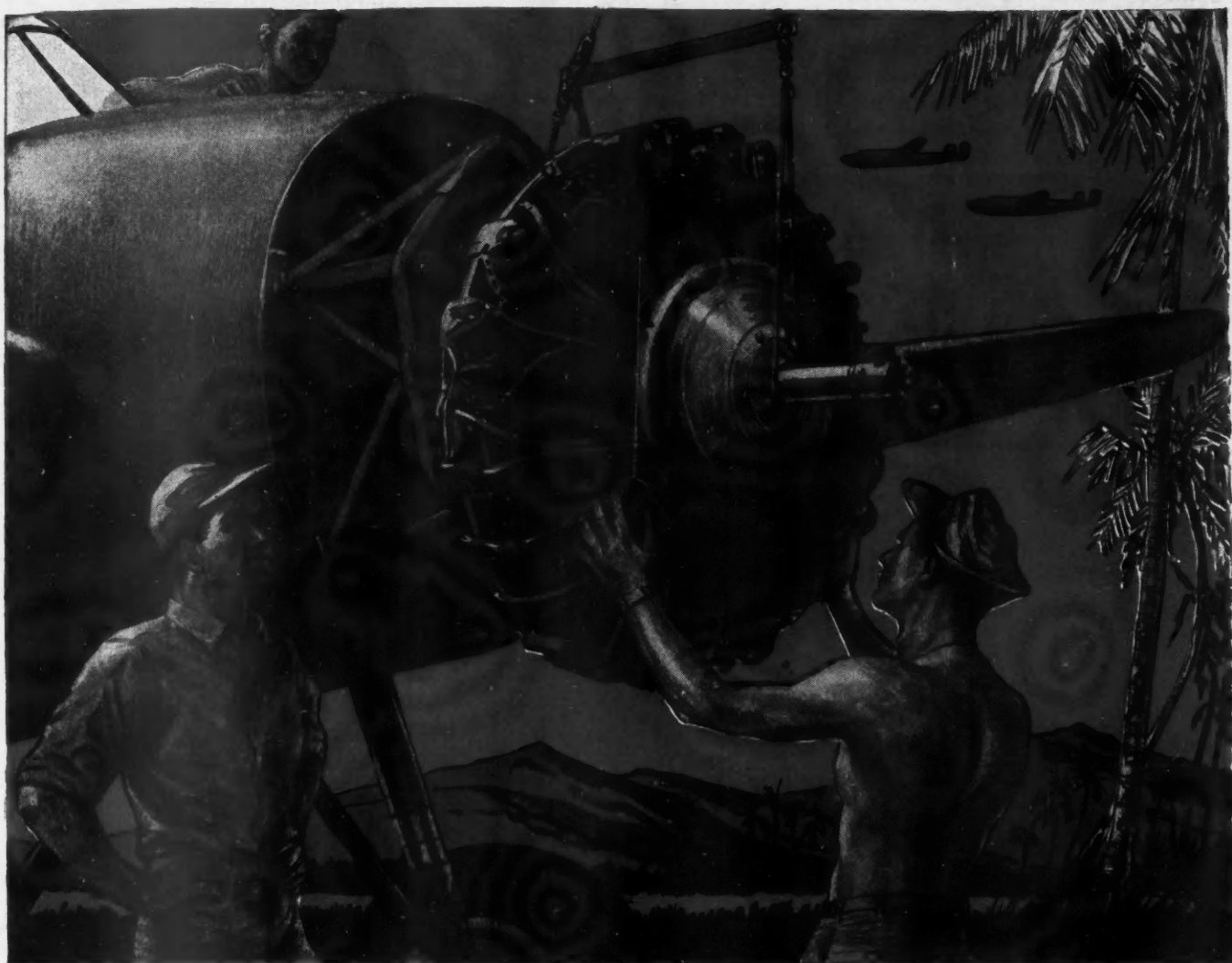
Trucks

Figuring the advantages gained by the use of light materials in trucks and buses is very simple arithmetic, especially where reduced vehicle weight means increased pay load, which is the most economical way to operate.

One truck operator claims that a reduction of a pound in the weight of a truck traveling 100,000 miles a year is worth one dollar to the truck operator. Assuming this to be a fact, reducing weight by use of aluminum pays and trucks should be made as light as practical.

Considering the large quantities of all kinds of aluminum that will be available after the war and, the price (TURN TO PAGE 142, PLEASE)

THIS "CYCLONE" WON ITS WINGS IN A TEST CELL!



BEFORE it leaves for the fighting front, every airplane engine is put through critical testing and breaking-in runs at the factory—it wins its wings by gruelling hours in a test cell.


Naturally, the *best* lubrication is a MUST with airplane engine manufacturers . . . vital beyond price, prejudice or any other consideration. These men have every facility for *fact-finding*, and they judge oil on performance alone.

It is significant that many leading airplane engine manufacturers use Wolf's Head. Signifi-

cant, too, that Pan American Airways has used Wolf's Head in the *Clippers* for over 14 years—more than ONE BILLION passenger-miles.

Now America's vital transportation must have the *best* lubrication science can provide. Play safe! Be guided by Aviation experts . . . use and recommend Wolf's Head Oil; it's the *best* engine-protection money can buy. Wolf's Head Oil Refining Co., Oil City, Pa., and New York, N. Y.

WOLF'S HEAD MOTOR OIL AND LUBES

100% PENNSYLVANIA  P. G. C. O. A. Permit No. 6



(CONTINUED FROM PAGE 140)

at which it will be available, it should be practical to use 500 lbs. of aluminum in the average pleasure car with very little, if any, increase in cost. This would mean a reduction in car weight of over 500 lbs. It should also be practical to reduce the weight of a heavy truck chassis 1500 lbs. at a small increase in cost which would very quickly be written off due to increased earnings.

END

(Please resume your reading on P. 60)

S.A.E. REPORTS

(CONTINUED FROM PAGE 62)

VALVES: Two-piece valves are now being used in which the amount of austenetic steel has been reduced. Valve clearances should be checked regularly, as the coefficient of expansion changes with elimination of austenetic steel. The new material used in valves is not as high as formerly used in heat resisting properties, and a lean mixture must at all cost be avoided.

BEARINGS: The new lead-base babbitts will give satisfactory service providing that

the temperature of the oil does not rise above 225 deg.

ENGINE GASKETS: Steel has been substituted for copper, and these new gaskets do not have the compatibility of copper. Check testing with torque wrenches on the cylinder head is advisable and the manufacturer should be contacted as to the proper torque wrench readings for steel gaskets.

RUBBER HOSE: Now made from reclaimed rubber. The breakdown of the hoses is comparatively rapid and, therefore, should call for much more frequent inspection.

COOLING SYSTEM: Water connecting tubes are now made from carbon steel, Parkerized, instead of brass. In some sections of the country the life of these new tubes will be much shorter than others due to the difference in water used.

FAN BELTS: Reclaimed rubber is being used and will call for more frequent inspection with respect to wear and tension.

CARBURETORS: Parts are now mostly made of steel with a protective coating. Floats may develop a leak due to lack of complete covering. Gasoline lines are now steel tubing, copper plated on the inside. Steel tubing has a disadvantage in not permitting ready repairing, it being necessary to have special tools to handle same. Flaring operations present a problem.

IGNITION: Stainless steel wire now being used. It is an extremely hard surface material, and calls for special care in seeing that fittings are firmly attached so as to make good contact.

RADIATORS: Steel has been used in some cases in place of copper fins. The number of fins per inch have been greatly increased making it easier for radiators to become clogged. Cores should be kept as clean as possible. Moist particles left on fins will cause corrosion.

CLUTCHES: The new linings are now being furnished without any rubber fillers or binders. They should be satisfactory if the driver understands the necessity of care.

TRANSMISSION: Increased care is needed in shifting from one speed to another as it appears that substitute gears chip more readily when gears are clashed.

AXLES: In the axles in which the new emergency steels are being used, sudden strains on axle shafts should be avoided. Fatigue is the property which is still unknown with respect to these steels.

STEERING: The use of emergency steels means that the wear life of steering gears will be possibly less. Examination of steering gears should take place at earlier intervals than has been usual in the past. Any undue play should call for the replacement of the part.

VACUUM POWER BRAKES: Where cast iron has replaced brass, one may expect some rust formation, and replacement will be necessary after a shorter service period than with brass. Rubber substitutions made in such parts as piston rod guards, will not have as long a life as the original crude rubber. Care must be exercised in the installation of these parts as the tearing of reclaimed rubber is very much more



The Sign of "Long-Life Peak Performance"

AMONG well known automotive trade marks recognized as symbols of quality, the Blue Streak trade mark holds a prominent place.

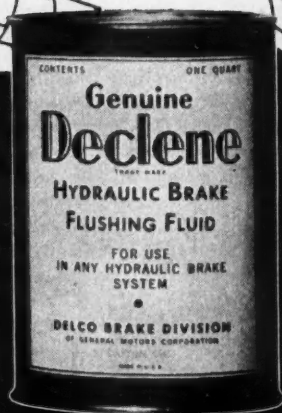
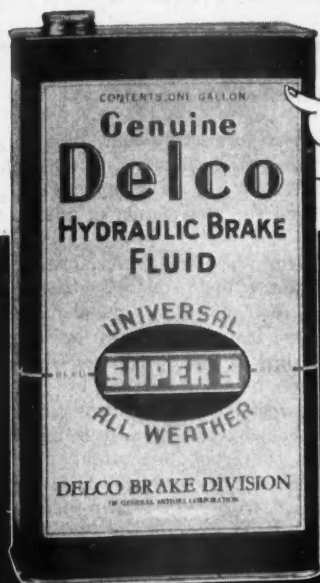
Repairmen know that ignition parts sold under the Blue Streak name will live up to their reputation. For long service—without let-down in efficiency—they are in a class by themselves.

When you replace an ignition part, demand and see that the one you buy bears the name "Blue Streak"—the sign of "Long-Life Peak Performance."

STANDARD MOTOR PRODUCTS INC.

37-46 Northern Blvd., Long Island City, N. Y.

(TURN TO PAGE 144, PLEASE)



Joe Brakeservice says—

DON'T NEGLECT THE HYDRAULIC PART OF THE BRAKE SYSTEM

Making mechanical adjustments and repairs is a mighty important wartime brake service. It saves tires and safeguards against accidents. But don't forget that the *hydraulic system* is just as important as the mechanical when it comes to safe, sure stops. Keep your eye out for these signs of danger:

LEAKS—A leak past the piston cups in the wheel cylinders causes loss of pedal. A leak past the primary cup in the master cylinder causes loss of pedal but does not drain reservoir. To correct, replace worn cups—flush system with Declene—refill with Delco Super 9. If bore is rough and corroded, replace cylinder.

AIR IN SYSTEM—Spongy pedal action, accompanied by loss of pedal reserve and loss of brakes, is a sign of air trapped in hydraulic system. To correct, bleed lines

—flush with Declene if fluid is dirty—refill with Delco Super 9.

DIRTY OR IMPROPER FLUID—Improper fluid containing harmful elements will cause rubber cups to swell and become inoperative. Dirt and gum in the system, either from inferior fluid or from careless servicing in the past, will also destroy cylinder parts. Don't simply replace parts and leave the cause uncorrected. To correct, flush with Declene—refill with Delco Super 9.

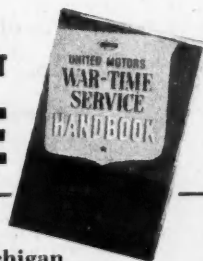


Delco Super 9, Declene and Delco Brake replacement parts are distributed by United Motors Service and Bendix distributors.



Delco
BRAKE-MORaine PRODUCTS
DIVISION OF GENERAL MOTORS CORPORATION

FOR MORE COMPLETE INFORMATION, GET
THE UNITED MOTORS WAR-
TIME SERVICE HANDBOOK **FREE**



UNITED MOTORS SERVICE
General Motors Building, Detroit, Michigan

Please send _____ copies of the United Motors Wartime Service Handbook to:

NAME _____

STREET _____

CITY _____ STATE _____

STANDARD FOR EQUIPMENT—THE STANDARD FOR REPLACEMENT

S.A.E. REPORTS

(CONTINUED FROM PAGE 142)

easily effected than with natural crude rubber.

★ DISCUSSION ★

STEVE JOHNSON, Bendix-Westinghouse Co., Automotive Air Brake Co.: The rubber content of certain parts used in air brake systems, can be reduced without any loss of efficiency or reduction in the life of the parts affected. For instance we have reduced the rubber content of diaphragm valves by 23 per cent, and experience has

shown that they are just as good as the valves which were made with 100 per cent rubber. We have made tests with balloon cloth diaphragms, and the indication is that they will be a satisfactory substitute if it comes to the point where we are no longer able to secure stainless steel for this purpose.

E. P. GOHN, Atlantic Refining Co.: To secure the longest life possible from substitute materials now being used in motor vehicles, lubrication becomes more important than ever. Due to greater loads, etc., wheel bearings in particular should be checked more frequently to see that they have adequate lubrication.



ALL NIGHT !

They're pushing hard, all night . . . transporting vital goods that can not be replaced . . . goods that must be delivered on time. Perfect control . . . all the way . . . means a safe arrival at sun-up. Help assure and protect deliveries, with absolute brake control.

RELINE WITH GRAFILD
... AND GET THAT
CERTAIN FEELING



RELINE WITH
GRAFILD
BRAKE LININGS

ROLLS - SETS - SLABS - BLOCKS
CLUTCH FACINGS

WORLD BESTOS CORP., PATERSON, NEW JERSEY

ORDNANCE FIELD SERVICE

By Brigadier-General Julian S. Hatcher
Chief, Field Service Division
Office Chief of Ordnance

Field service has set up many Base Automotive Shops in key locations to handle the gigantic project of complete engine overhaul and the reclamation of unserviceable parts.

One process used in the reclamation of parts is the chrome plating of slightly worn parts—piston pins, cylinder walls, and, in some instances, pistons—which are then refinished to a standard size. Obsolete engines are being converted to current models by installing front motor supports and bell housings, obsolete transmissions are being converted to current use by replacement of front bearing retainers and main shaft. Worn and broken parts are converted; thus a Chevrolet universal joint cross worn beyond reclamation, is ground down to become a certain Dodge part. Three GMC oil filler pipes, made obsolete by a crankcase ventilation modification, are cut and welded with scrap baling wire to make two Dodge breather pipes.

Sleeving of discarded seamless steel tubing is being used to put back into service transfer case yokes, universal joint crosses, pinion shafts, and fan pulleys which are worn beyond reclamation by wet grinding processes.

Clutch pressure plates have been ground as much as .050 in. with such success that the manufacturer now agrees that this is practicable.

OTHER SPEAKERS

Robert Gayley and A. B. Tincher gave interesting talks, the former on the training of women drivers, and the latter on the technique of cold welding. Two articles, one appearing on page 48 and the other on page 51 of this issue, contain all the information given in these talks.

END

(Please resume your reading on P. 64)

Botsford Made Chief

Joseph B. Eastman, director of the ODT, has appointed Samuel Botsford as ODT Information Officer. Mr. Botsford served for several years on newspapers in Harrisburg and Pittsburgh, Pa.

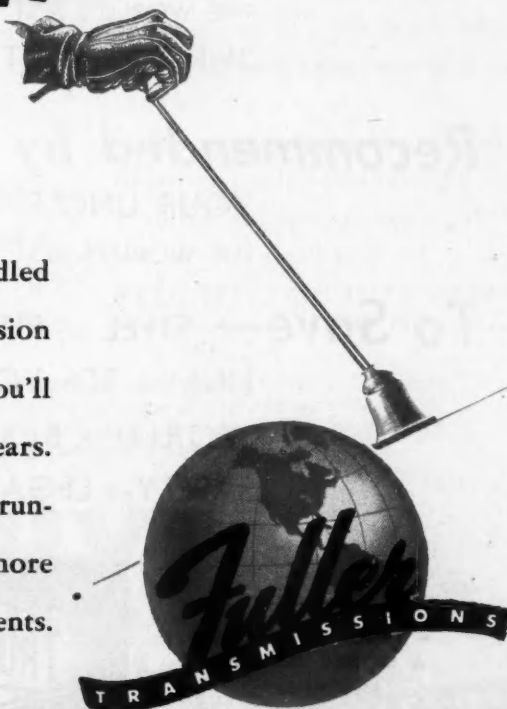


Taxi-bus designed and built of salvaged materials by enlisted members of the Ordnance Detachment at Blackland Army Flying School, Waco, Tex. It is 19 ft. long, 5½ ft. wide, weighs 3250 lb. and is pulled by jeep or ¼-ton tractor



SINGLE RESPONSIBILITY

Every step in building a Fuller Transmission is handled in Fuller's own plant . . . forging, gear cutting, precision gear mating, assembling and testing . . . that's why you'll find the name *Fuller* stamped on all genuine Fuller gears. Look for the name . . . it is your assurance of a smooth running gear . . . and, of course, smooth running means more wear life, less need for service and parts replacements.



FULLER MANUFACTURING COMPANY • KALAMAZOO, MICHIGAN

DRIVERS CAN SHOOT TROUBLE

(CONTINUED FROM PAGE 41)

Steering wander.

Tight steering assembly or gear.
Loose wheels.

STARTING TROUBLES

Engine will not start.

Ignition switch not turned on . . . No
fuel in gas tank . . . Weak battery . . .
Battery terminal corrosion or loose con-
nection . . . Short-circuited or burned

spark plug . . . Wet spark plugs or wir-
ing . . . Weak condenser . . . Flooded
carburetor . . . Plugged fuel lines . . .
*Starting motor not strong enough to start
engine.*

Battery weak or completely discharged
. . . Loose or corroded connections . . .
Engine oil too heavy . . . Engine too
stiff . . . Poor carburetor adjustment
. . . Excessive choking of the engine . . .
Starting motor commutator burned or
dirty . . . Starting motor armature
burned . . . Starting motor switch de-
fective.

END

(Please resume your reading on P. 42)

QUIZ ANSWERS

(QUESTIONS ON PAGE 76)

1. a. Of the two billion barrels of crude oil produced last year, the Axis accounted for 5% in Europe and another 1% in Asia. The rest was controlled by the Allies. The United States alone produced 66.3% of the world's total.

2. b. The P.I.W.C. is headed by William R. Boyd, Jr., who is also president of the American Petroleum Institute. The P.I.W.C. includes in its membership the presidents of all the larger oil companies, the presidents of the various oil company trade associations, and some representatives of smaller organizations.

3. d. A cubic mile would hold about a trillion gallons . . . or to be exact, 1,101, 117,147,428 gallons. Sounds like the war debt, doesn't it? Or, if you want it in barrels, it amounts to 34,056,099,918 barrels.

4. d. Rabbits. A new oil line is a veritable magician's hat. When the line is filled up and the oil starts moving, very frequently the first thing to come out is rabbits. Rabbits and other small animals with inquisitive natures explore the line while it is building and are trapped within the pipe.

5. b. The Civil War. The first attempt to convey oil by pipe was made by a Jerseyman named Hutchings in 1863, a 2½-mile line of 2 in. iron pipe near Oil City, Pa. Teamsters, however, fearing the loss of their business destroyed the line before it could be put into operation. First commercially successful pipe line was laid in 1865 by Samuel Van Syckel from Pithole, Pa.—the original boom-town—to the railroad station at Miller Farm four miles away.

6. b. Petroleum is the source of the toluene in TNT (trinitrotoluene). Practically all the toluene used in World War I and in commerce up to the time of rearmament was made from coal tar, a by-product of coke ovens. Now, even though more toluene is being produced from coal than ever before, most of today's supply is coming from the oil refineries.

7. b. Standard Oil Company of New Jersey, with assets of two billion dollars and annual sales of about one billion dollars. Only other company with annual sales above a half-billion is Socony-Vacuum.

8. b. Before the diversion of tankers to foreign service and the submarine sinkings, oil tankers left the Gulf ports at the rate of one every hour. A million and a half barrels of oil a day were supplied to the 17 Eastern states by water.

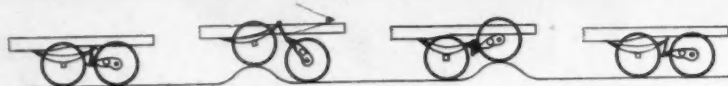
9. a. Carbon Petroleum Dubbs is the name. The Dubbs process is owned and licensed by the Universal Oil Products Company and is used in one form or other by about 80% of the major refineries.

10. b. The Athabasca tar sands are located about 300 miles north of Edmonton in the province of Alberta, Canada. These are huge deposits of sand held together by heavy bituminous tar. The tar can be washed from the sand with hot water and refined into gasoline, kerosene, and fuel oil. The potential is estimated at 125 billion to 300 billion barrels.

ALL IN YOUR FAVOR

TRUXMORE

WORLD'S BEST 3RD AXLE



Distributed by

TRUCKSTELL DISTRIBUTORS

THE WORLD'S BEST EQUIPMENT PEOPLE THROUGHOUT UNITED STATES

Recommended by

YOUR UNCLE SAM

AUTO DIV.
W.P.B.

THE WORLD'S BEST UNCLE

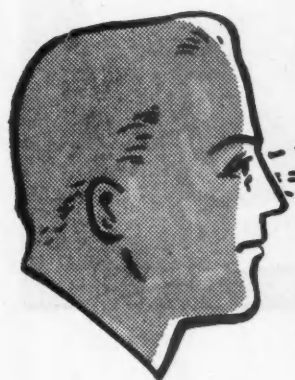
To Save— STEEL — RUBBER AND GASO- LINE — SO YOU CAN DO THE WORLD'S BEST HAULING JOB SAFELY—LEGALLY—PROFITABLY.

WRITE FOR BULLETIN #34

"A TRUCK SHOULD BE
A MONEY MAKING
MACHINE"



LOOK AT THE DELUXE CARTRIDGE FOR A LOOK INSIDE THE ENGINE



CARBURETION TOO RICH

IGNITION FAULTY

ENGINE TEMPERATURE TOO LOW

OIL TOO HEAVY



Throw YOUR Scrap into the Fight!

➔ Faulty engine, carburetion, ignition and lubrication conditions can be detected by DeLuxe engineers by simple inspection and analyzation of the used DeLuxe cartridge!

In one fleet of fifty-two trucks, for example, DeLuxe engineers correctly analyzed the exact engine condition of each truck without seeing a single

motor! Not only did the analyzation reports check with known conditions but they also revealed the unsuspected existence of improper carburetion, ignition and lubrication.

So far as is known, such analyzation is possible only with DeLuxe cartridges. It provides a service especially timely to Transport Operators

who must do everything within their power to keep 'em rolling efficiently, with maximum conservation of oil and fuel.

Requests for this service are welcomed and will be handled by DeLuxe field engineers as quickly as the volume of requests permits.

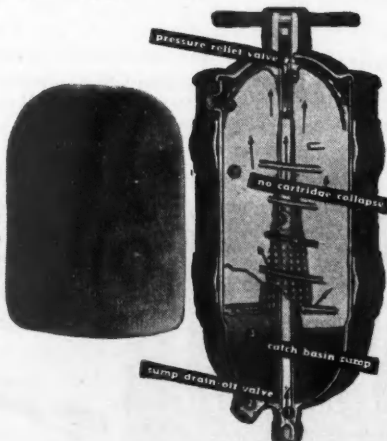
DELUXE PRODUCTS CORP.
1406 Lake Street . . . La Porte, Indiana

SEND FOR FREE BOOKLET EXPLAINING WHY—1. DeLuxe oil cleansing makes possible lowest per mile oil and maintenance costs. 2. There is no substitute for the DeLuxe cartridge for maximum efficiency and lower cartridge replacement cost.

DELUXE Oil Filter

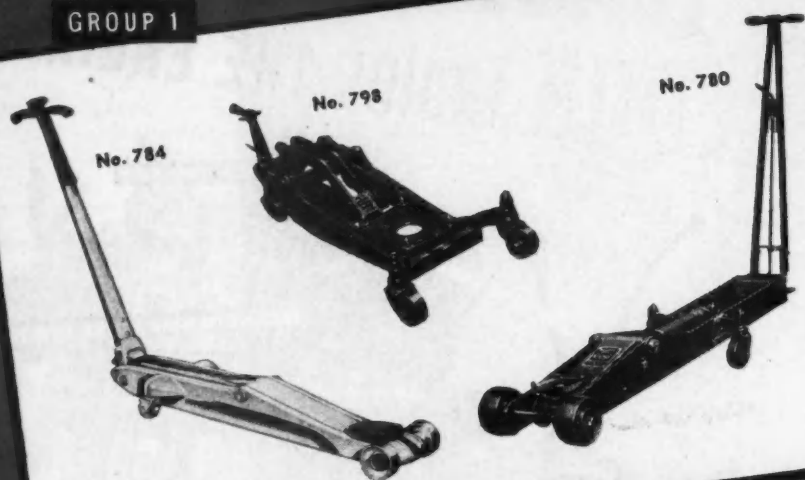
DOES MORE THAN STRAIN OIL . . . MORE THAN FILTER OIL
ACTUALLY CLEANSSES OIL

When engine conditions are "right" DeLuxe Cartridges should look like this when ready for replacement.



New W. P. B. Order L-270 Again Makes Available Certain Walker Lifting Equipment

GROUP 1



GROUP 2



● Because the job of properly maintaining essential vehicles is so important to the winning of the war, the War Production Board has permitted certain vital maintenance equipment to again be produced in *controlled quantities* under the new Limitation Order L-270—issued on April 5.

As a result certain specified models of Walker Jacks, both service and portable types—and certain other essential Walker service equipment, such as Rigid Racks and the truck Transmission Jack, will be available for general civilian use.

This Walker equipment falls into the three groups illustrated and may be purchased by you under the restrictions as listed at right. Please read the restrictions governing each group carefully.

All should be deeply appreciative of the helpful action taken by the Shop Equipment Section of the War Production Board in making this and other vital service equipment again available to you.



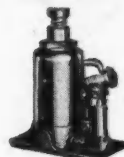
No. 925



No. 930



No. 935



No. 945



No. 950



No. 270



No. 235

GROUP 3

GROUP 1

Walker No. 780—10-Ton Hydraulic Service Jack. Walker Greyhound No. 784—4-Ton Hydraulic Service Jack. Walker Unit Lift No. 798 Truck Transmission Jack.

GROUP 2

No. 791 Rigid Rack—2 tons capacity, for cars with low-set axles and frames. No. 792 Rigid Rack—5 tons capacity, ample for general garage use. These two numbers of Rigid Racks may be purchased by any automotive service establishment. No preference rating is necessary.

GROUP 3

Walker Portable Hydraulic No. 925—2 tons; No. 930—5 tons; No. 935—8 tons; No. 945—12 tons; No. 950—20 tons; and Walker Mechanical Tool Box Jacks No. 235—3 tons and No. 270—5 tons. These Jacks may be purchased by any holder of a C, R or T gasoline ration book and by farmers.

WALKER MANUFACTURING COMPANY OF WISCONSIN, RACINE, WISCONSIN • Also Makers of Walker Exhaust Silencers and Electric Lifts

WALKER

LEADS IN

JACKS





Swarms of Flying Fortresses fly on Studebaker-built Cyclone engines

The skies are studded with Flying Fortresses in many theaters of this global war. Almost legendary are the achievements of our Army Air Forces with this devastating Boeing bomber—and any manufacturer would be glad to play even a minor part in the victories it is rolling up. We, of Studebaker, have the responsibility of producing huge quantities of the Wright Cyclone engines that power the Flying Fortress, enabling it to

travel so fast, so far, so high. Each of these supercharged engines we build adds new luster to a Studebaker reputation for sound craftsmanship that now spans more than 91 years. Studebaker equipment at the battle fronts will be succeeded, one day, by new and finer Studebaker cars and trucks for civilian use. Until that day, our first and only consideration is helping to arm our Nation and its Allies.



Tens of thousands of multiple-drive Studebaker trucks for the United Nations—And Studebaker also produces much other vital war matériel besides military trucks and Wright Cyclone engines for the Flying Fortress.

Studebaker BUILDS WRIGHT CYCLONE ENGINES FOR THE BOEING *Flying Fortress*

from The Commander-in-Chief in Africa . . .

CLASS OF SERVICE This is a full-rate Telegram or Cablegram unless to deferred character is indicated by a suitable symbol placed at the beginning of the address.	WESTERN UNION A. N. WILLIAMS PRESIDENT NEWCOMB CARLTON CHAIRMAN OF THE BOARD J. E. WILLIAMS FIRST VICE PRESIDENT	SYMBOLS DL - Day Letter NL - Night Letter LC - Deferred Cable NLT - Cable Night Letter Day Telegram
---	---	---

The above rates apply to the date here on telegrams and day letters to STANDARD TIME at point of origin. Those of receipt to STANDARD TIME at point of destination.

LD164JH (CDU214) GOVT LG 1943 MAY 15 PM 4 03

WAR WASHINGTON DC MAY 15 1943 137P

TO THE MEN AND WOMEN OF

AMERICAN AUTOMATIC DEVICES CO CHGO

THIS MESSAGE FROM THE COMMANDER IN CHIEF OF THE ALLIED FORCES IN AFRICA IS RELAYED BY THE WAR DEPARTMENT OUR FIGHTING MEN, STANDING SHOULDER TO SHOULDER WITH OUR GALLANT ALLIES, THE BRITISH AND THE FRENCH, HAVE DRIVEN THE ENEMY OUT OF NORTH AFRICA, IN THIS VICTORY THE MUNITIONS MADE BY AMERICAN INDUSTRY, LABOR AND MANAGEMENT, PLAYED A VERY IMPORTANT ROLE, THERE IS GLORY FOR US ALL IN THIS ACHIEVEMENT

EISENHOWER GENERAL COMMANDER IN CHIEF OF THE ALLIED FORCES IN AFRICA



... and
our reply

Change to the account of Name Address City State Zip Send the following telegram, subject to the terms on back hereof, which are hereby agreed to	WESTERN UNION NEWCOMB CARLTON CHAIRMAN OF THE BOARD J. E. WILLIAMS FIRST VICE PRESIDENT CHICAGO, ILL. MAY 18, 1943	WANT A REPLY? "Answer by Western Union" or similar phrase may be included without charge.
--	--	---

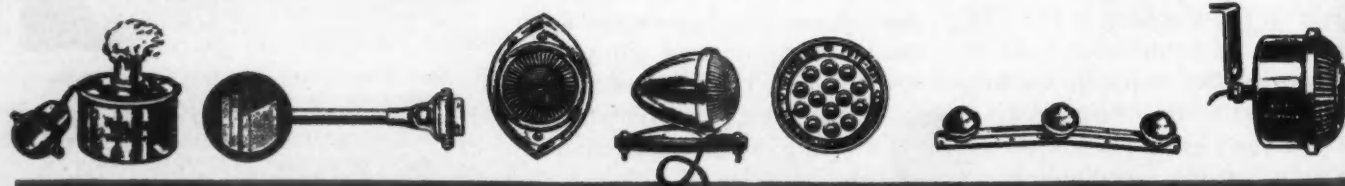
GENERAL EISENHOWER, COMMANDER IN CHIEF OF THE ALLIED FORCES IN AFRICA
C/O WAR DEPARTMENT, WASHINGTON, D. C.

YOUR TELEGRAM IS DEEPLY APPRECIATED BY OUR WORKERS AND MANAGEMENT. WE ARE PROUD TO SHARE IN OUR OWN WAY AND BE COUNTED AS PART OF THE FIGHTING FORCES WHO HAVE WON SUCH AN OUTSTANDING VICTORY IN AFRICA. THE AMERICAN SPIRIT OF "KNOW HOW AND DO" WILL NEVER DIE. GOD BLESS THE FIGHTING FORCES AND WITH HIS AID AND THEIR DETERMINATION COMPLETE VICTORY SHOULD SOON BE ACHIEVED.

OLIVER C. RITZ-WOLLER PRESIDENT AMERICAN AUTOMATIC DEVICES COMPANY

PREPAID

KING BEE IS SERVING ON ALL FRONTS including THE HOME FRONT



AMERICAN AUTOMATIC DEVICES CO.

Manufacturers of the Famous KING BEE Products

HARRISON, THROOP AND CONGRESS STREETS

CHICAGO, ILL.

PREVENT TRUCK "ABSENTEEISM" WITH AMALIE MOTOR OIL



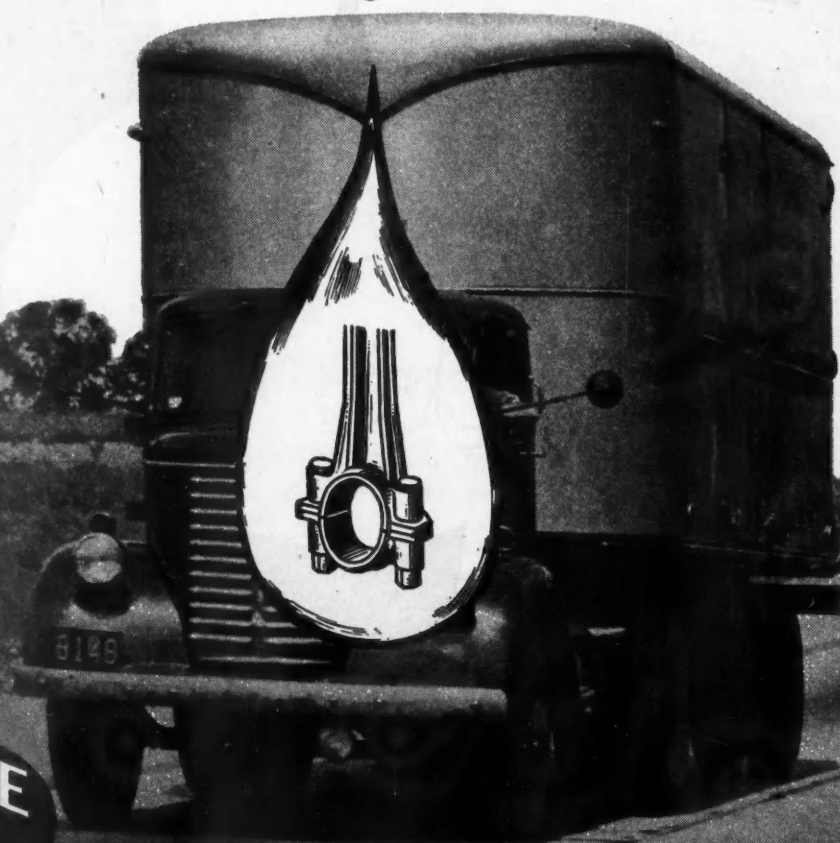
Preventing breakdowns before they happen is the way to keep vital trucks on the highway. And an important part of preventive maintenance is the regular and consistent use of AMALIE Pennsylvania Motor Oil.

Take the case of connecting rod bearings. Overloading and greater mileage between service check-ups all emphasize the need for the best oil obtainable.

AMALIE Pennsylvania Motor Oil is doing a time-and-money-saving job in this critical spot for thousands of overworked trucks. Its Greater Oiliness* is safeguarded by the straight-run refining methods which are exclusive with this Company. Experience dating back to 1880 has helped to make a fine product steadily better.

Write Dept. J120 for FREE Booklet "Greater Oiliness."

* The Sperry-Cammen Adheroscope test ranks straight-run Pennsylvania Oils highest in oiliness.



Product of DAUGHERTY REFINERY

Division of L. SONNEBORN SONS, INC., New York, N. Y.
Refineries: Petrolia, Pa., and Franklin, Pa. • Plants: Nutley, N. J.



UNIVERSITY OF MICHIGAN LIBRARY

KEEP 'EM ROLLING

...NOW AS EVER AN INSTITUTION AT YOUR SERVICE

In war as in peace, you'll find your nearest Authorized Distributor of genuine Bendix-Westinghouse Air Brakes and Air Control Devices a most competent headquarters for your every control problem.

★ Despite the many obvious burdens currently confronting these strategically located outposts, you'll find them, without exception, as dependable and quite possibly more resourceful than ever. They're geared to the times and dedicated to the policy of "Keep 'em Rolling."

★ For the duration, no one could be more capable or willing to assist you in rigid maintenance and reliable counsel in rehabilitation. ★ You're invited to use this service freely. ★ Thus we can assure you safe, smooth, economical Brake Control until Victory ushers in a new era of motor transportation which will, as ever, find genuine Bendix-Westinghouse Air Controls waiting and ready to accept newer, greater responsibilities.

**BENDIX-WESTINGHOUSE
AUTOMOTIVE AIR BRAKE
COMPANY
ELYRIA, OHIO**



AN ORGANIZATION WHOSE UNDIVIDED EFFORT AND COMPLETE RESOURCES

ARE DEVOTED TO YOUR CONVENIENCE AND SAFETY

IN A TAPERED ROLLER BEARING

COUNT THE ROLLS... ...THE ROLLS COUNT!

☆ The number of rolls in a bearing is of utmost importance—
for rolls carry the load.

Obviously, more rolls carry more load. And, with the load distributed over more rolls, each roll has a smaller part of that load to carry. Result: longer bearing life.

Thanks to improved design, Tyson is able to add more rolls around the raceway—about 30% more, on the average. Size for size, the Tyson "All-Rolls" Bearing has more load capacity ... has longer life ... has greatest rigidity.

Tyson

HEAVY-DUTY BEARINGS

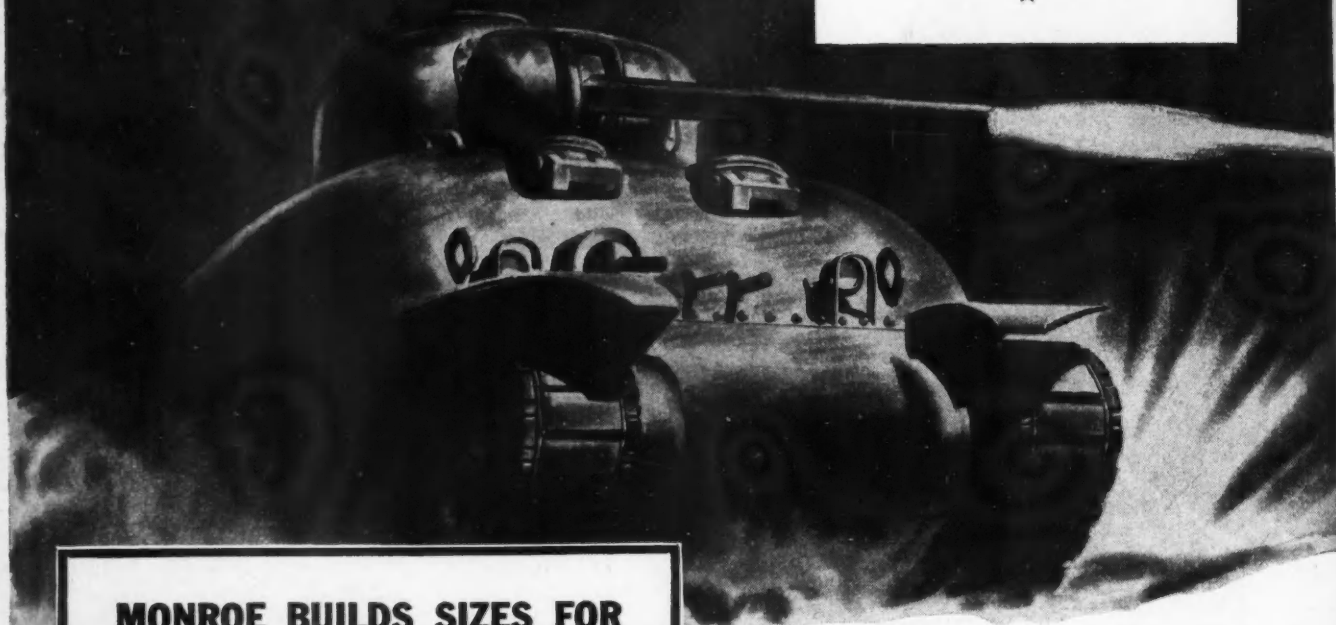


TYSON BEARING CORPORATION
MASSILLON, OHIO

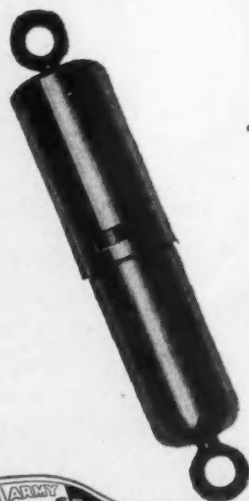


Tyson Products also include precision parts for America's airplane engines

★
**THE SPEARHEAD
 OF ATTACK IS
 ALL IMPORTANT.**
 ★



**MONROE BUILDS SIZES FOR
 ALL TYPES OF VEHICLES**



HALF TRACKS



TRANSPORTS



JEEPS



MONROE

SHOCK ABSORBERS

★ On many fronts, vehicles equipped with Monroe Shock Absorbers have rendered conspicuous service—in fact so many services, and so many vehicles that they cannot be enumerated.

The United Nations Armies have come to know that Monroe Shock Absorbers are most dependable, and add certainty to the most hazardous land venture.

Monroe equipment brings victory closer!



CISCO SOLVENT

Removes Gum, Sludge and Grime!

CISCO SOLVENT

Protects Engine, Transmission, Differentials!

CISCO SOLVENT

Helps Prevent Costly Breakdowns and Repairs!

CISCO SOLVENT

Keeps Your Fleet in Action Longer!



Call your nearest Cities Service office
for a Cisco Solvent demonstration today.
There is no obligation, of course!

OIL IS AMMUNITION—USE IT WISELY!



CITIES SERVICE OIL COMPANY
NEW YORK • CHICAGO

IN THE SOUTH
ARKANSAS FUEL OIL COMPANY
SHREVEPORT, LA.

Trucks . . . like Navy Men . . . must keep "IN CONDITION"

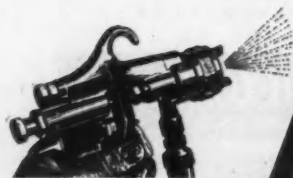
• Whether he's loading big guns under heavy fire, fighting hand-to-hand or at sea without a ship, a Navy man must be able to take it. He's conditioned for any emergency.

And being IN CONDITION will make your trucks last longer in these days of heavy hauling schedules.

So, use your DeVilbiss Spray Painting Equipment regularly—to stop rust from eating into chassis parts, radiators, fender seams and body surfaces.

And to speed up and improve your shop maintenance be sure to keep your DeVilbiss Compressors and Service Equipment IN CONDITION too. If you do, they will serve you faster, better and last longer. Let your DeVilbiss distributor help you keep them IN CONDITION until replacements are available.

THE DEVILBISS COMPANY • TOLEDO, OHIO
Canadian Plant: WINDSOR, ONTARIO



DEVILBISS



PROUD to have won the coveted Army-Navy "E" for excellence in war production, the men and women of DeVilbiss pledge to continue giving their all-out best—for Victory.

SPRAY EQUIPMENT • EXHAUST SYSTEMS • AIR COMPRESSORS • HOSE AND CONNECTIONS

UNDER NEW WPB ORDER ALL TRUCKS CAN RECEIVE VITAL PROTECTION OF "PRESTONE" ANTI-FREEZE NEXT WINTER

TO BE DOUBLY SURE OF YOUR
NEXT WINTER'S SUPPLY—*ORDER NOW!*

Despite the WPB ruling, the supply hazards created by war conditions make the buying of your next winter's "Prestone" anti-freeze—*right now, this summer*—the prudent thing to do. Remember, this is the anti-freeze that:



CAN'T EVAPORATE
OR BOIL AWAY

PROTECTS
AGAINST RUST
AND CORROSION

*ONE SHOT
LASTS ALL WINTER
YOU'RE SAFE
AND YOU KNOW IT!*

SAME PRODUCT AS ALWAYS

**SAME AS
LAST YEAR**
O.P.A. Retail
ceiling Price
\$2.65
per gallon

New Limitation Order Opens Way to Important Savings of Critical Gas and Equipment

One stated purpose of the new WPB order prohibiting sales of ethylene glycol anti-freeze for use in passenger cars is to make sure operators of commercial vehicles get the utmost in anti-freeze protection next winter.

Owners of busses and trucks are among those benefited by the new ruling. With "Prestone" anti-freeze in the radiators, it will not be necessary to "idle" engines during cold weather rests. The result will be important gas savings at a time when fuel shortages restrict commercial vehicle operation in many parts of the country.

A further effect will be to minimize the possibility of breakdown due to cooling system trouble, and the resultant need to replace parts made of critical materials. One filling of "Prestone" anti-freeze gives absolute protection for a full winter.

CAN'T BOIL AWAY

One shot of "Prestone" anti-freeze lasts all winter long. Because it contains no "boil-away" alcohol, it cannot evaporate or boil away. It will not give off fumes. It does not create a fire hazard.


Finally, "Prestone" anti-freeze contains special ingredients that protect against rust and corrosion.

The words "Eveready" and "Prestone" are registered trade marks of National Carbon Company, Inc.

Unit of Union Carbide **UCC** and Carbon Corporation

PRESTONE ANTI-FREEZE

TRADE MARK



FORTUNE-TELLING IN A FLASH

There's a spark and a puff of burning vapor—it's over in a flash. But while the bit of metal burned, a lens clicked. A picture was taken of its past, present and future.

On the film, made in an instant, is a record of the elements in the sample. American Hammered engineers study that picture and know what was in the metal they burned—and what kind of piston rings it would have made. They know whether rings made of that metal will last for hundreds of grueling hours in the engines of a Flying Fortress... How they will stand up in a tank on the African desert.

★ ★ ★ ★

American Hammered rings have been contributing to

faster and more powerful planes ever since World War I—have played their part in establishing practically all important records and accomplishments in the air. When the war call came, for piston rings that were a year ahead of the planes then in the air, American Hammered was ready!

No one factory could make aviation rings in the enormous quantities needed for United Nations' plane production. It is fortunate that A-H patents, methods, processes—even special micro-finishing equipment—could be shared with other piston ring manufacturers. Shared for combined war production.

American Hammered Piston Rings

FOR CARS • TRUCKS • BUSES • TRACTORS

a

K O P P E R S

*Better by 25 Years of
Aviation Engineering
product*



17 Johns-Manville factories and mines strategically located throughout the U. S. and Canada



This Johns-Manville Sales and Service Engineer is one of a staff of J-M representatives, ready to help truck and bus fleet operators get greater efficiency and safety under heavy wartime pressure.

HE BRINGS YOU THE *"Know-How"* OF THE J-M ASBESTOS BRAKE LINING LABORATORIES

IN analyzing what American industry has done to meet the grave problem of winning the war, we realize that "Know-How" has been a most important force.

This "Know-How"—this accumulated knowledge and experience built up over the years—is exemplified by the research Johns-Manville has devoted to the development of asbestos friction materials. J-M's research and experience with asbestos for efficient friction materials dates back to the birth of the automotive industry. As a result of this specialized "Know-How" our armed services are placing many of their friction-materials problems for mechanized

warfare in the hands of the Johns-Manville Laboratories . . . the finest laboratories in the world devoted to asbestos products.

This same "Know-How" helps guide every J-M brake lining and friction-material recommendation to bus and truck operators in meeting rigid wartime service requirements.

Your J-M representative is backed by this "Know-How" when he offers to help you get the safest, most economical braking you have ever known. For his services, and for further information about the individualized J-M Brake Survey Plan, write Johns-Manville at New York, Cleveland, Chicago, St. Louis or San Francisco.



JOHNS-MANVILLE BRAKE LININGS

FLEET-TESTED SETS

BRAKE BLOCKS

CLUTCH FACINGS

POWER TO WIN

POWER TO WIN means *striking power* — and power available at instant notice, even under the guns of the enemy, to keep our hard-hitting equipment on the move and in action. Absolute dependability, the greatest asset of Continental Red Seal Engines, is providing **POWER TO WIN** for vital equipment on all fronts — in the air, on land and sea; also for our farms, oil fields, and for industry.



Awarded to the Detroit and Muskegon Plants of Continental Motors Corporation for High Achievement.

Continental Motors Corporation

MUSKEGON, MICHIGAN

Your Dollars Are Power, Too! . . . Buy War Bonds



PROVED IN ACTION...

ON UNCLE SAM'S COMBAT VEHICLES



STEWART-WARNER INSTRUMENTS

Can Help Your Trucks To Longer Life!

WHEN you're in enemy country, you can never guess what may be over the next hill or around the next turn in the road. But you *must* know that every part of your machine is in top-notch working order—and accurate instruments provide that information at a glance. Which is why so many of Uncle Sam's combat vehicles carry Stewart-Warner Instruments!

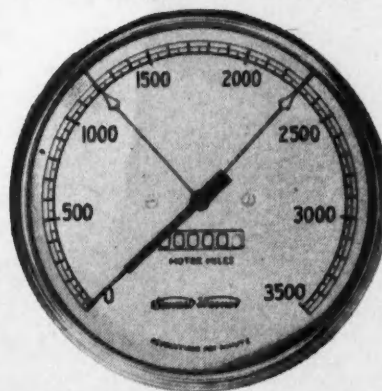
That same reliability can help your trucks to longer life! Engine speeds, for example, must be kept within the "economy range" if your motors are to work at maximum efficiency, with minimum consumption of fuel, over the longest possible period of years. Operating above or below the "econ-

omy range" means not only needless waste of fuel, but needless wear and tear on the motor. And every one of your drivers can stay within this range—easily—if every truck is equipped with the Stewart-Warner Motor Mile Tachometer.

What's equally important, these amazing instruments record "motor miles" instead of "road miles"—idling wear as well as traveling wear—so that your trucks can be serviced on that basis. *This is another contribution to longer truck life.*

Your trucks are part of America's diminishing transportation equipment. It is a patriotic obligation to keep them operating in good order until trucks

are again being manufactured. Let Stewart-Warner Instruments help you meet that obligation! Mail the coupon!



STEWART-WARNER

MOTOR MILE TACHOMETER



1876 DIVERSEY PARKWAY • CHICAGO, ILLINOIS

STEWART-WARNER CORPORATION
1876 Diversey Parkway, Chicago

I operate _____ trucks. Please give me complete information on Stewart-Warner Motor Mile Tachometers.

Name _____

Address _____

City _____ State _____

Firm Name _____

When you use Quaker State HD—
Costs slant* down immediately!

AMERICAN BOTTLING COMPANY, INC.

MANUFACTURERS OF
**BLACK ROCK AND VIRGINIA DARE
BEVERAGES**

87 ELLSWORTH STREET
BRIDGEPORT, CONN.

October 9, 1942

Quaker State Oil Refining Corp.
Oil City
Pennsylvania

Gentlemen:

At this time, when all fleet operators know it is their patriotic duty to conserve the life of their equipment, the writer feels that you would be interested in the results we are obtaining from your Quaker State H. D. oil.

Our fleet, consisting of twelve trucks, of varied capacities, distributing Virginia Dare beverages to Fairfield and New Haven counties, have been lubricated with your commercial oil since its advent. Previous to using Quaker State H. D. oil, we used a well-known premium brand.

*Upon close inspection, we find that with your oil, our motor repair costs have been reduced a great deal. We feel that this is due to the fact that our motors apparently are clean and free from sludge. The trucks seem to have an exceptional amount of power and it is not necessary to have the usual after summer season valve jobs done this year. Our records also reveal that our oil consumption has been considerably less for each vehicle in our fleet.

Yours very truly,
AMERICAN BOTTLING COMPANY, INC.

Janis Varga
General Manager

LLV:as

Quaker State HD Oil
for your trucks, buses and tractors



Quaker State
Motor Oil for your passenger cars

**QUAKER STATE
HD OIL**

QUAKER STATE OIL REFINING CORPORATION • OIL CITY, PA.

COMMERCIAL OPERATORS ASSURED OF "PERMANENT TYPE" ANTI-FREEZE SUPPLY

New Government Regulation
Restricts Use of "Zerex" to
Commercial Vehicles

YOU CAN GET "ZEREX" NOW!

BULLETIN—No passenger automobile, station wagon or taxicab can now get "Zerex." Sale of "permanent type" anti-freeze solutions containing ethylene glycol is limited to commercial vehicles and stationary engines.

This move by the U. S. Government assures the commercial operator of his supply of the type of anti-freeze best suited to heavy-duty requirements. Motor trucks and buses, which often operate at high temperatures, require an anti-freeze with a high boiling point.

With trucks and buses playing an essential part in the nation's wartime transportation system, the Government has wisely reserved the limited supply of "Zerex" to commercial operators . . . even though this means some inconvenience to operators of private cars.

Du Pont Non-Acid, Non-Evaporating Anti-Freeze Especially Good for Heavy-Duty Requirements

THE ORDER of the War Production Board releases for your bus and truck use a supply of ethylene glycol anti-freeze that should be enough for all if operators avoid buying or using more than they need.

Du Pont "Zerex" anti-freeze offers you many advantages. It is non-acid, non-evaporating. It won't boil away. One filling lasts all winter in a tight cooling system, of course.

The Government recognizes that a "permanent type" anti-freeze is needed by operators of trucks and buses doing heavy duty. On the other hand, if your units are light and conditions of service not severe, we recommend the use of War Emergency "Zerone." By using "Zerex" only in heavy-duty equipment you can help to conserve still further the nation's supply of ethylene glycol anti-freeze.

In either case, be sure the cooling systems of your vehicles are tight and free from leaks. Have them inspected and cleaned before putting in "Zerex" or "Zerone." It's a good idea to establish a regular twice-a-year practice of cooling system checking and servicing.



FOR HEAVY-DUTY SERVICE

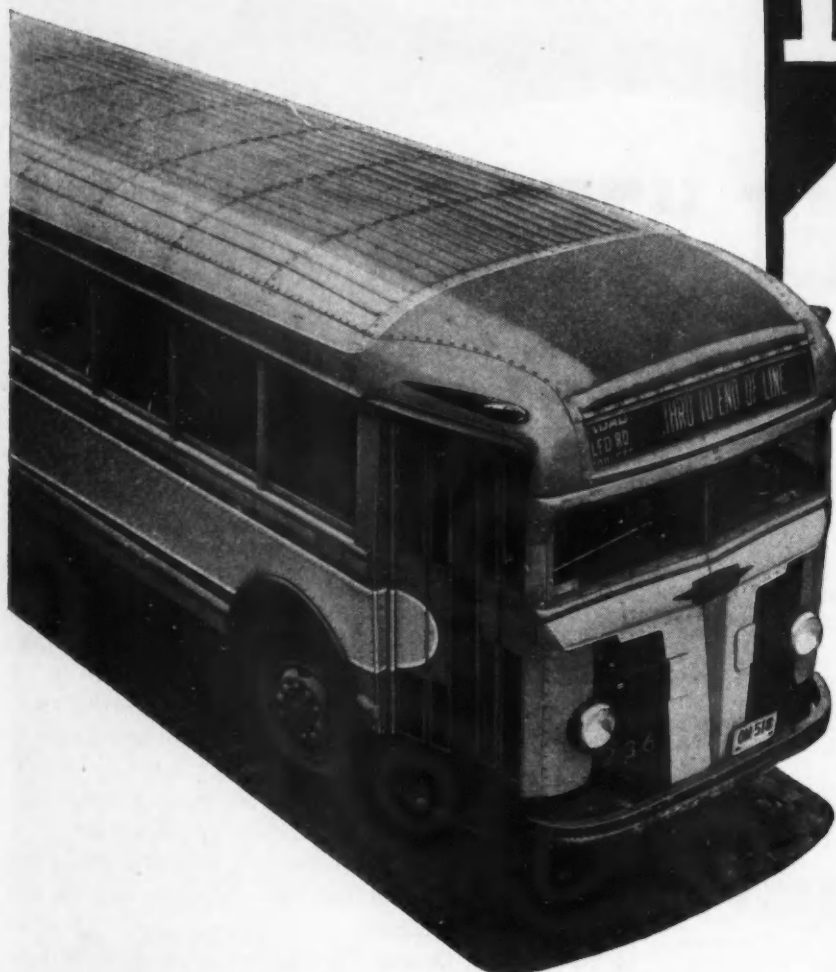
"Zerex" won't boil out. One filling lasts all winter long. Non-evaporating, anti-acid. Same formula as last year. \$1.77 a gallon to fleet operators (retail price: \$2.65).

FOR LIGHT DUTY

War Emergency "Zerone" is based on ethanol—gives satisfactory protection against freezing at an economical price—94¢ a gallon to fleet operators (retail price: \$1.40).



KEEP THEM RUNNING



Safety Glass

These are trying times for bus and truck operators! You're busy—have to keep your stock rolling—while schedules continue to get tougher and equipment must be kept in condition to meet extra load requirements.

One way of keeping 'em rolling is to insist that the glass in your equipment be kept in top-notch condition. The sure way to do this is to replace all cracked, broken or discolored windows and windshields with genuine Libbey-Owens-Ford Safety

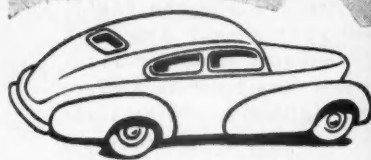
Glass. You'll create greater safety and passenger comfort and eliminate customer complaints when you reglaze with this clearer, truer vision Safety Glass.

If you do your own glazing, see that your stocks and sizes are kept up to date. Your L·O·F Distributor will be glad to co-operate. If your glazing is done outside, insist that your glass shop reglaze your jobs with genuine L·O·F Safety Glass. Libbey-Owens-Ford Glass Company, 7763 Nicholas Bldg., Toledo, Ohio.



LIBBEY·OWENS·FORD

A GREAT NAME IN *Glass*



WILLYS-OVERLAND MOTORS, INC., who manufacture the JEEP, recommend to their dealers the use of HALL Valve Servicing Equipment for restoring new car standards of valve precision, finish and performance in servicing passenger and commercial vehicles.

It takes a
**GAZELLE, KANGAROO
and MOUNTAIN SHEEP**
to Match Performance
with a Jeep!



Left: Model EJ HALL Service Type Valve Seat Grinder.

Above: HALL Wet Type Valve Refacer.

In every Jeep are combined the speed of a gazelle, the jumping qualities of a kangaroo and the mountain sheep's ability to cling to a precipice.

Stamina and performance under desert heat, tropical steam and arctic blast are other Jeep characteristics of which WE are particularly proud.

That's because HALL ECCENTRIC Valve Seat Grinders were adopted for Jeep production as well as for their maintenance by the Armed Forces of the United Nations.

Whenever you see a JEEP think of HALL, the world's finest valve and valve seat grinding equipment for production or service.

THE HALL MANUFACTURING CO., Toledo, Ohio

HALL



America's first superhighway—the Pennsylvania Turnpike—is performing a gigantic war service . . . a service that wasn't contemplated when this express link between the Midwest and the East was opened less than three years ago.

Here is its wartime record: 140 miles saved for more than a thousand trucks and trailers a day on hauls between the Midwest and the Eastern seaboard. 140 "scratched" miles that would be wasting tons of tires, tank cars of gasoline, thousands of valuable hours.

And after Victory, other superhighways already laid out, but not constructed, will weave

the Pennsylvania Turnpike into a network of roads that will help to bring about the highly integrated transportation system that America's post-war expansion will demand. And the Trailmobiles—the new, post-war Trailmobile trailers—will roll on these superhighways, adding their improved efficiency and economy to tomorrow's faster transportation.

THE PENNSYLVANIA TURNPIKE is today a vital link in the wartime logistics of the United Nations. It is part of the 'round-the-globe network of Army and civilian transportation that is rushing supplies and replacements to the strategic battle-fronts of the world. If you are interested in transportation, you will want to see how its wartime development will contribute to your own post-war operations. Mail the coupon below for your free copy of "Logistics . . . the Science of Moving Armies and Supplies."

TRAILMOBILE

Commercial Trailers for War and Peace



THE TRAILER COMPANY OF AMERICA
Cincinnati, Ohio Branches in Principal Cities

Send for this free booklet!

ATTENTION! ALL TRANSPORTATION MEN!

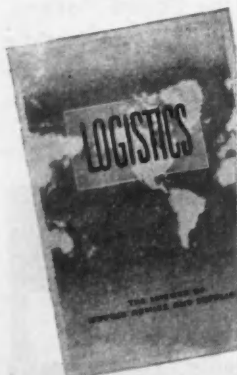
See how your job is part of the greatest transportation system ever conceived. Send for your free copy of "Logistics—the Science of Moving Armies and Supplies."

Name _____

Company _____

Dept. _____

Address _____



Trailer Tail Lights

Twenty large cities in the United States receive 100% of their milk by truck and trailer.

In 1917 there were 362,000 motor transports in operation. Today there are 4,911,000.

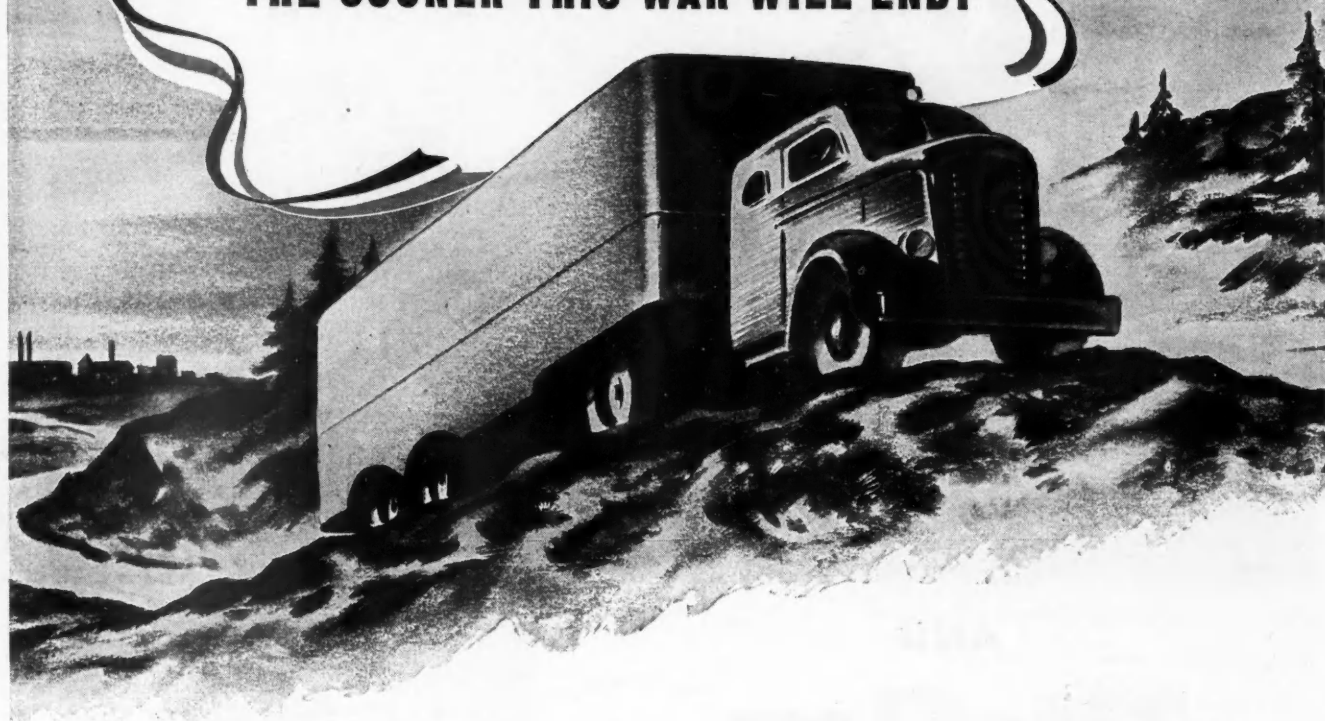
A Trailmobile now being made for our Armed Forces is used to pick up disabled bombers and rush them back to their bases for repairs.

Fruit and vegetable growers and shippers recently listed eighteen reasons why they prefer trucks and trailers in marketing farm produce.

There were 40,800 civilian truck trailers produced in 1941, the last complete year before civilian production was curtailed.

*The Sooner This Truck
Hits Tidewater...*

THE SOONER THIS WAR WILL END!



PART of the job of ending this war in a hurry is strictly up to you truck operators and maintenance men. The closer your trucks keep to schedule, the quicker will Victory come.

And trucks **do** keep close schedules — risks of costly breakdowns are avoided — when replacements are made with Permite Parts. They are machined with the same precision as parts for new car use. Many truck manufacturers specify Permite Parts as original equipment.

Easily installed — long lasting — always dependable — Permite Parts keep your trucks rolling and hold down operating costs.

While Permite is producing vast quantities of parts for the armament and equipment of our Army, Navy and Air Force, it is also keeping Permite Jobbers' stocks amply supplied with the truck parts you need for maintenance. For trucks are necessary to Victory!

PERMITE REPLACEMENT PARTS



ALUMINUM INDUSTRIES, Inc.

Cincinnati, Ohio, U. S. A.

DISTRIBUTORS IN PRINCIPAL CITIES

The PERMITE Line

ALUMINUM ALLOY	VALVE STEM KEYS	SPRING SHACKLES	WATER PUMP
PISTONS	VALVE SPRINGS	BUSHINGS	REPAIR KITS
SEMI-STEEL PISTONS	BOLTS	SEAL-PACK	MUFFLERS AND PIPES
PISTON PINS	BOLT SETS	WATER PUMPS	CYLINDER SLEEVES
VALVES	TIE-ROD ENDS	WATER PUMP PARTS	WET SLEEVE
VALVE GUIDES			ASSEMBLIES



AND
Titeflex

REG. U. S. PAT. OFF.

helps keep them Tough

They build TITEFLEX into jeeps, because, like tanks and other front line vehicles, every part of this all-purpose car has to be tough. Tough enough to stand grueling service in the sands of Libya, the mountains of Tunisia, and the bottomless muck of Guadalcanal. Tough enough to *Keep them rolling* through the offensives ahead.

And it's the same toughness and longevity of TITEFLEX fuel, oil and air lines that makes them first choice for trucks, buses and other heavy-duty vehicles back home. Made from enduring, corrosion-resisting

metal, with abundant flexibility to withstand incessant vibration and shock, TITEFLEX is playing a vital role by contributing to long, trouble-free mileage and lower maintenance costs.

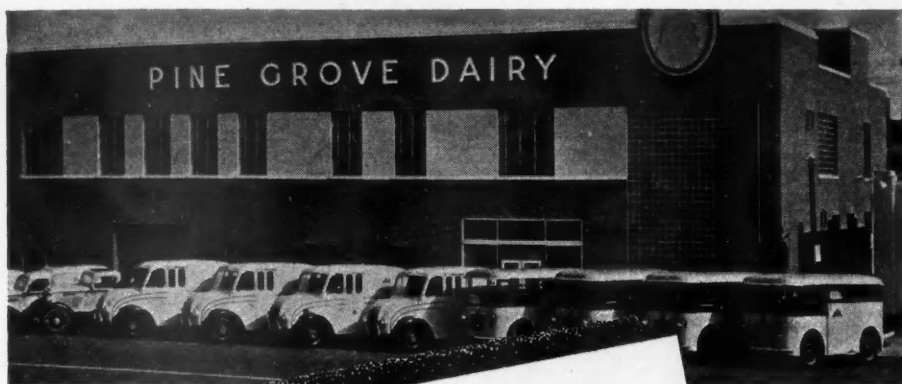
Because our armed services require so much TITEFLEX for vital war needs, home-front requirements, in some instances, have been denied. However, the TITEFLEX reclamation program is helping to salvage many assemblies which formerly were discarded. Send for our Reclamation Folder describing this program.



TITEFLEX METAL HOSE CO., 525 FRELINGHUYSEN AVE., NEWARK, N. J.



"VALVOLINE — Finest That Can Be Found!"



So Says
PINE GROVE DAIRY
*In Praise of the All-
 Around Superiority
 of*

VALVOLINE OIL

Owner and operator of a large fleet of modern trucks, New York's Pine Grove Dairy adds more strong evidence to the growing conviction among fleet operators everywhere, that they can't beat Valvoline for all-around performance.

Pine Grove reports their fleet "in constant use under the most trying conditions . . . there is 15% less oil consumption—increased mileage between drains—no trouble with sludging conditions, and the period of general engine overhaul has been greatly lengthened."

You can't find better lubrication than that. Pine Grove Dairy knows it. All users of Valvoline products know it—and keep right on using them.

Investigate Valvoline. And ask about the money-saving features of Fleet Laboratory Service. Write your nearest Valvoline office—today.

VALVOLINE OIL COMPANY

580 East Fifth Street, Cincinnati, Ohio
 New York - Chicago - Atlanta - Los Angeles

PINE GROVE DAIRY
 1120 ERIE BLVD. SCENECTADY, N.Y.
 PHONE 47741



Dec. 22, 1942

Mr. P. R. Rider
 Rider Oil Company, Inc.
 Schenectady, New York

Dear Perc:

It is a far cry from the way milk was handled in grandfather's day to the spic-and-span mechanized plant of today. The Pine Grove Dairy is one of the best arranged in the state, and I am keeping up-to-the-minute by continually visiting important dairy centers. For instance, our trucks are of the latest refrigerator type which assures that the last customer on the route will have milk as cool as when it left the dairy.

Similarly, on lubrication I have investigated many high grade oils and greases and, after three years' exclusive use, have come to the definite conclusion that Valvoline oil and greases are the finest that can be found. My fleet is in constant use under the most trying conditions. As an example, last week the temperature ranged between zero and 20° below, while today it is 30° above. More specifically, there is 15% less oil consumption—increased mileage between drains—no trouble with sludging conditions, and the period of general engine over-haul has been greatly lengthened.

Yours very truly,
Joseph L. Marco
 President

SAVE MONEY — KEEP 'EM ROLLING

with

VALVOLINE

The 1st Pennsylvania Oil



In every city of the land, Railway Express units rush quick shipments of war to their destination.

Longer hours and service, greater loads, multiplied loading and unloading subjects these bodies to unusual and strength-sapping conditions.


But these all-metal bodies are tough, incorporating carefully selected materials and that type of skilled workmanship which is ex-

pected of the York-Hoover organization.

Yesterday we proudly served Railway Express and many other operators throughout the nation.

Today we are working conscientiously for Uncle Sam and are proud of our part in the all-out effort.



Tomorrow our augmented facilities, experience and vision will again be turned to the happy pursuit of a peace loving nation.



For Excellence In Body Production

YORK-HOOVER BODY CORPORATION

EAST YORK, PENNSYLVANIA

BODY DIVISION



This truck owner had so many worries he didn't know what to do—until—he went to his Fisk Truck Tire Distributor and this is what he found out:

His Fisk Distributor has been working at the "same old stand" for a lot of years. He knows tires. He knows tire care. Oftentimes he can actually see tire trouble before it happens.



Since tire rationing, Fisk Truck Tire Distributors have made it their business to keep up-to-date with official regulations and requirements. They make it a point to have the answers to the questions *you* want to know. As official tire inspectors they are ready and willing to serve you.

Ask any Fisk Distributor about the Fisk War Necessity Service. Whether it's time to repair, time to recap, or "Time to Re-Tire," follow the sign of the Fisk Boy to save money, time and trouble.



TIME TO RE-TIRE
REG. U. S. PAT. OFF.

SEE YOUR **FISK** TIRE DISTRIBUTOR

FISK TIRES Division of United States Rubber Company



How to get Low Cost per mile **SPARK PLUG WIRE SERVICE** ...and Conserve Copper, too



*Specify Belden
spark plug wire.*

*Available Belden automotive wires
and cables are listed in the War
Edition of the Belden catalog.*

Most spark plug wires become stiff and brittle after aging and exposure to heat. When moved, as in checking spark plugs or servicing the engine, they are easily cracked if bent sharply. Don't disturb this normal set—make it a rule in servicing spark plug wires to handle with care.

Wires that last longer conserve copper, rubber, tin, and other vital war materials. When it is necessary to replace spark plug wires, specify Belden. Belden spark plug wires, a product of years of specialized experience, retain their insulating properties longer—assure long, low-cost service—fewer replacements—greater savings of vital war materials.

BELDEN MANUFACTURING COMPANY
4681 W. Van Buren St., Chicago, Illinois

Belden

WIRE

SPARK PLUG WIRES • BATTERY CABLES • PRIMARY WIRES

We can handle all
the orders we get
since **TRUCKTOR**
doubled our payloads



"**WE** couldn't get new trucks, and turning down orders was souring good will. Then, we heard of Trucktors, filled out form PD 310 and told our ration board how Trucktor Third Axles would double our payloads yet save most of the vital manpower, steel, rubber, gas and oil new trucks require."

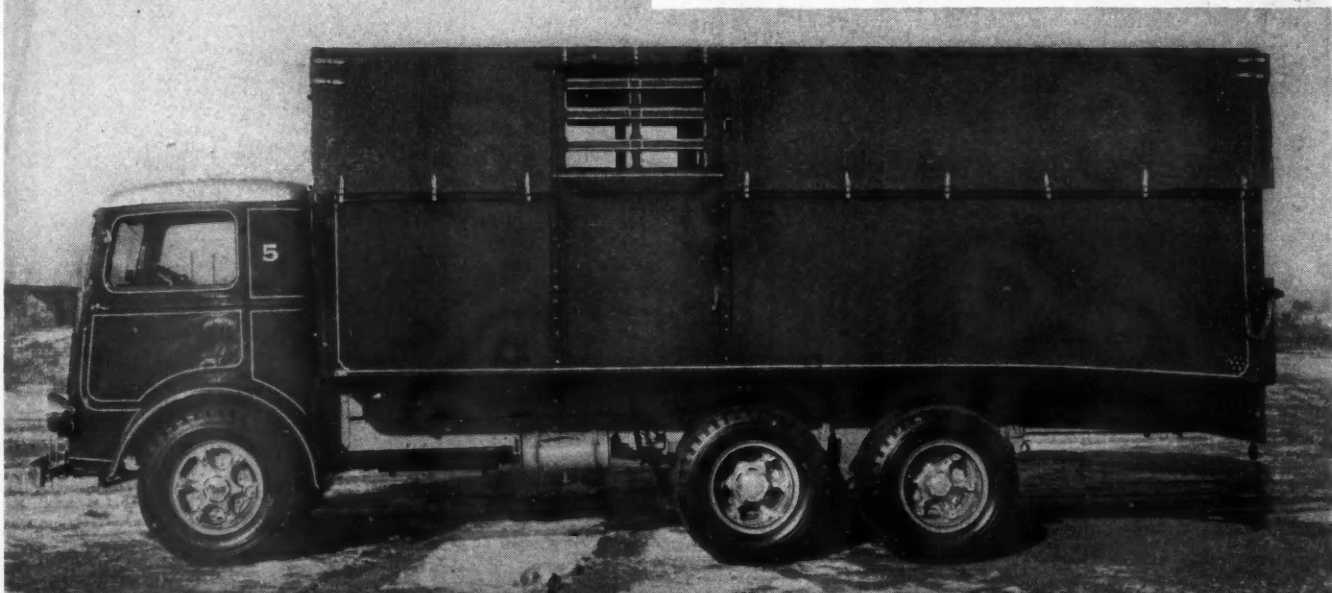
"The board's okay gave us a chance to see in operation that Trucktors are not only easier on the road—as Government Impact Tests prove—but also easier on the truck."

You, too, can verify that. Watch the springs and rocker arm weave as a Trucktored truck rolls a bump. Trucktor's six point suspension spreads the load stresses and prolongs the truck's life.

I. C. C. reports back up insurance statistics that say six-wheelers are safer. Easy maneuverability, too, is shown by Army adoption of third axle trucks for fast, rugged going.

Get that extra capacity you need, with a Trucktor Third Axle. Write today for complete details.

THE TRUCKTOR CORPORATION
156 WILSON AVENUE • NEWARK, N. J.



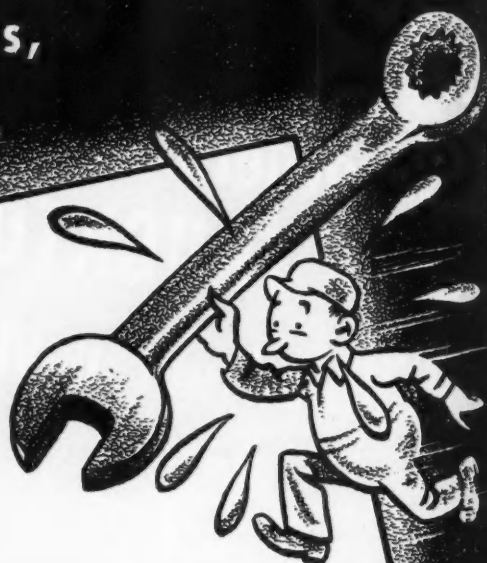
Trucktor **THIRD
AXLES**

More Miles with Fewer Repairs,
Tear-Downs and Spare Parts...

LIPE

Heavy-Duty CLUTCHES

help skeletonized service crews
keep overworked trucks running longer!

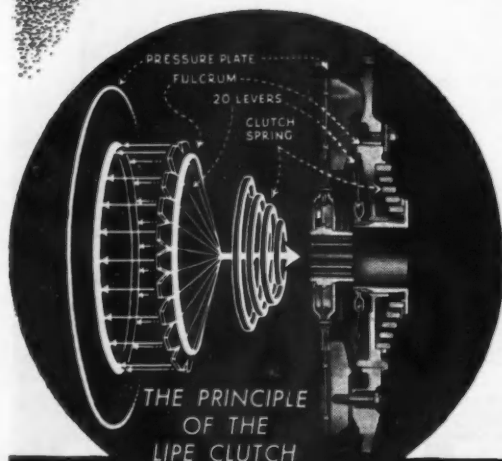


Fleet operator after fleet operator are telling us the same story: Extra wartime demands, plus shortages of spare parts and replacements are all bad enough, they say. But when you add to that both skeletonized service crews and unskilled men, the only solution as far as drive-line ills are concerned, is LIPE Heavy-Duty CLUTCHES.

For, Lipe's basically better design cushions the shock of gear engagements, reduces the shearing strains on engine, transmission, drive-line, and differential, saves the scuffing of rubber. It makes the entire truck last longer, keeps it running more miles between tear-downs, and definitely reduces the need for spare parts. Here's why:

The uniform pressure of the single Lipe spring (see diagram) is distributed evenly all around the plate by 20 pressure-equalizing levers. That means every part of the plate touches **EVENLY**—and at the **SAME INSTANT** and with the **SAME PRESSURE**. Result: No grab, no shock, no sudden strain. No points of high-speed slippage. **NO BURN**. The truck gives **MORE MILES**, the clutch **MORE ENGAGEMENTS** between tear-downs. And wear adjustment is possible without tear-down or special tools—just an easy placement of shims.

Here's another fundamental of long life: LIPE employs the **PUSH-TYPE** release, in which the throw-out bearing operates **ONLY** when clutch is released.



● Write today for your free copy of the LIPE SERVICE MANUAL. See for yourself why LIPE HEAVY-DUTY CLUTCHES are basically better.

LIPE - ROLLWAY CORPORATION

Syracuse, N. Y.

**ALL NEW ST. LOUIS PUBLIC SERVICE COMPANY BUSES
PURCHASED WITHIN THE LAST TWO YEARS**

ARE EQUIPPED WITH

WAGNER
Air Brakes



Buses equipped with Wagner Air Brakes have rolled over 23,000,000 miles for the St. Louis Public Service, who have built up an enviable reputation for the fastest schedules throughout the entire country.

Because of high operating efficiency, outstanding economies, and thorough reliability, Wagner Air Brakes are contributing their part to this outstanding reputation established by the St. Louis Public Service.

Today, thousands of Wagner Air Brakes are giving outstanding service on trucks, tractors, trailers and buses, and are establishing enviable performance records. Attesting to this fact we herewith quote the expressions of just a few of our many users:—

"Our fleet is equipped with Wagner Air Brakes. Some of these units have as much as 100,000 to 150,000 miles. In all cases Wagner Air Brakes are giving perfect satisfaction". . . "We have used Wagner Air Brakes for nearly three years, during which time our equipment has traveled 600,000 miles. At no time have we been held up or delayed because of brake trouble". . . "The fact that our drivers have complete confidence in their ability to stop quickly under any condition has resulted in decreased running time and a saving of tires, brake lining and general service expense". . . "Wagner Air Brakes have played a large part in our safety campaign. In five years we have had only one minor accident". . . "The compressors on two of our vehicles have operated 140,000 and 250,000 miles and are still operating perfectly and have never been touched by a mechanic."*

You, too, can lower your brake maintenance and increase the brake efficiency of all of your vehicles by installing Wagner Air Brakes. Remember, Wagner is a national organization and can render field engineering service from any one of its 25 branches located in principal cities.

*Names and addresses furnished on request.

Write for Bulletin KU-50
IT CONTAINS COMPLETE INFORMATION

K43-3

Wagner Electric Corporation

ESTABLISHED 1891

6470 Plymouth Avenue, St. Louis, Mo., U. S. A.

AUTOMOTIVE AND ELECTRICAL PRODUCTS



**WAGNER
ROTARY AIR
COMPRESSOR**

A TYPICAL BUS INSTALLATION



**WAGNER
POWER
CLUSTERS**



NEW TRUCKS...



...FOR OLD!

New trucks for old! Wouldn't that be a break, today, when it's difficult to get new trucks for *real money* . . . hard even to get replacement parts?

No, you can't get new trucks for old. But you can get *better service* from old trucks. *Correct* lubrication will help your present equipment to give better performance over longer service hours.

You obtain that *correct* lubrication by using Sinclair Pennsylvania or Opaline Motor Oil and Sinclair specialized gear oils and greases. They are made for saving wear and keeping trucks standing up in heaviest operating schedules.

Try the Sinclair Preventive Maintenance Plan, too. Write nearest Sinclair office or Sinclair Agent for our Preventive Maintenance Record and Lubrication Charts for your trucks. They are free.

SINCLAIR AUTOMOTIVE OILS

FOR FULL INFORMATION OR LUBRICATION COUNSEL WRITE NEAREST SINCLAIR OFFICE
SINCLAIR REFINING COMPANY (INC.)
2540 WEST CERMAK ROAD, CHICAGO • 10 WEST 51ST STREET, NEW YORK CITY
RIALTO BUILDING, KANSAS CITY • 573 WEST PEACHTREE STREET, ATLANTA • FAIR BUILDING, FORT WORTH



Avoid needless delay when tire changes are necessary



-- Equip your trucks with **HEIN-WERNER HYDRAULIC JACKS**



Model 20.10A

Promptness of deliveries is vital in the war program. Nobody can afford to waste time, especially time required to haul anything which is even remotely connected with war production or war needs.

Do your part by making sure that your trucks are equipped with hydraulic jacks and are prepared to avoid unnecessary loss of time in changing tires on the road.

The speed and ease of operating a Hein-Werner Hydraulic Jack cuts down the "lost time" required to lift the tire clear of the road, change the tire, and get the job rolling again.

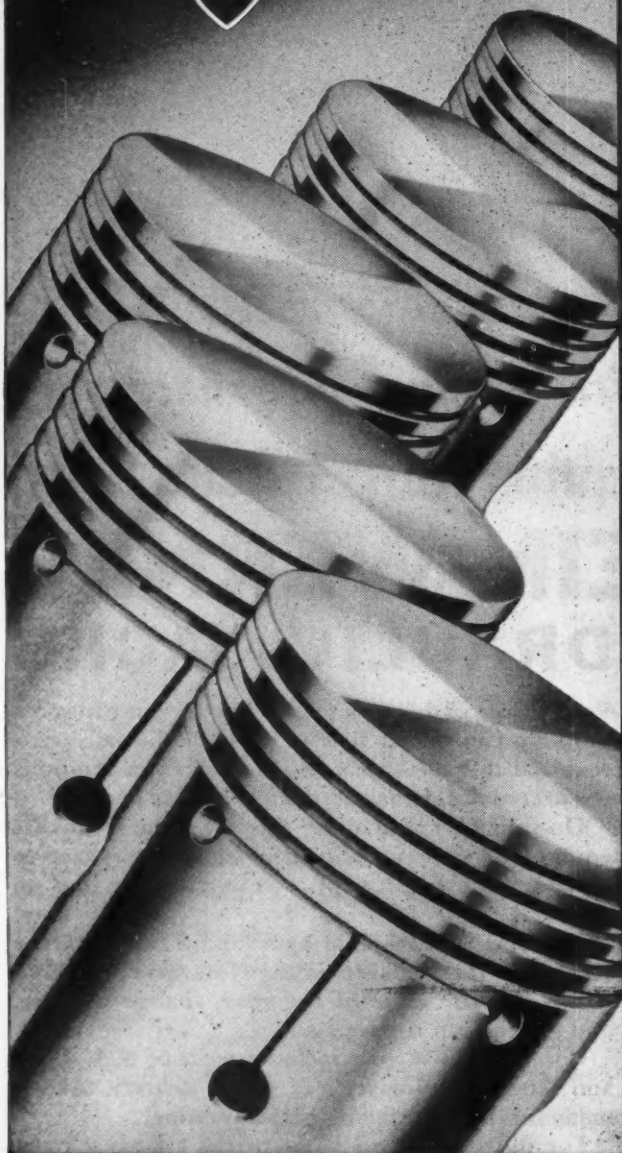
Complete H-W line includes jacks of 3, 5, 8, 12, and 20 tons capacity . . . *Quick delivery* can be made on orders carrying priority rating.

For full details and latest prices, ask your H-W jobber, or write us.

HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

**HEIN-WERNER
HYDRAULIC JACKS**
Are Built Right and Priced Right

PISTONS by OHIO



Pistons, for everything that's powered by an engine, are OHIO's contribution to the war effort. We had no new tasks to learn; the skill that made LYNITE* LO-EX PISTONS, machined and sold by OHIO before the war, the finest obtainable was simply turned in this new direction.

LYNITE LO-EX PISTONS will be made available through OHIO's regular distributors just as soon as peacetime production is again permitted. These pistons will be ready then to resume their prewar place as favorites for replacement work; made even better than before because of what we're learning on war production.

**Lynite and LO-EX are registered trademarks of Aluminum Company of America, makers of castings for genuine Lynite Pistons.*

THE OHIO PISTON CO.

CLEVELAND, OHIO

**DON'T REPLACE
WHEN YOU CAN
REPAIR**

Delco-Remy WARTIME SERVICE NEWS

**DON'T REPLACE
WHEN YOU CAN
REPAIR**

BATTERY LIFE CAN BE INCREASED FLEET OWNERS FIND

Owners Report Proper Maintenance Leads to Longer Service

A recent survey of fleet reports received by Delco battery engineers indicates that approximately 80 per cent of all battery failures are due to four major causes. The survey shows how these contributing factors can be overcome through a correct maintenance plan, prolonging battery life many months and aiding in the conservation of critical materials.

Heading the list of battery failure causes are overcharging and improper location. Next in line is allowing the battery to sulphate by standing too long. Fourth cause is failure to maintain proper electrolyte level.

Examples of Conservation Cited

Shifting the location of batteries, venting units with cool air, and insulating part of battery compartment proved effective for a large southern fleet. Battery life was greatly prolonged by keeping units below the 115° F. "danger point."

A western operator, whose fleet travels rough mountain highways, had trouble with cracked and worn cases, worn separators and broken posts. Solution was a periodic check of carrier fastenings.

Regular inspection of the current and voltage regulator setting "paid off" for an eastern company. Particular importance was placed on original adjustments to compensate for local operating conditions.

New Batteries Use Material Needed By Armed Forces



Because so much material formerly available in large quantities now goes into products for our armed forces, Delco battery engineers point out that proper battery maintenance programs are a national necessity.

The picture shows a typical Delco truck or bus battery. These units, which are still available for necessary replacements, feature dual insulation, rubber case, heavy, long-life plates and rugged cell connectors.

NATION'S BUS OPERATORS SET MARK

Extend Battery Life Through Periodic Check-up Plan

Bus operators who have established exceptional battery service records stress the importance of maintaining proper electrolyte levels, cleaning terminals and connections regularly, and taking correct care of idle batteries.

When a vehicle becomes inactive, it has been found advisable to remove the battery. Periodic recharging is then required to keep the battery's gravity above 1.225.

GOOD RECORDS IMPORTANT IN CARE OF BATTERIES

Operators report that a well-kept, up-to-date set of battery records will prove extremely helpful in prolonging battery life. For a complete record of each unit, batteries should be numbered on the case or connector, so that performance can be studied at each check-up period.

With these records, operators can determine which batteries require excessive water or frequent recharging, and can then take proper corrective measures. Circuit leakage, internal shorts and low voltage in the generator-regulator system are among the most common causes of repeated recharge. Excessive water requirements indicate a high voltage setting.

The records also serve as a guide to the "life expectancy" of batteries, indicating when units should be rebuilt to avoid road failure.

Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION
ANDERSON, INDIANA

**AUTOMOTIVE, AIRCRAFT, TRACTOR
AND MARINE ELECTRICAL EQUIPMENT**



Delco truck and bus batteries are sold through independent distributors and United Motors Service branches located in all parts of the country.



Walter Tractor Trucks

TOUGH HAULING JOBS WANTED!

IF YOU'VE got to haul enormous loads through soft dirt, mud, sand, gravel, snow, deep rutted tracks or over broken terrain in all kinds of weather — you need Walter Tractor Trucks! The exclusive 4-Point Positive Drive System, patented Automatic Lock Differentials and Tractor Type Transmission give Walter Tractor Trucks their super-traction and full delivered power for any ground and any weather.

Walter Tractor Trucks have proved their value for years as trouble shooters for 'phone and power companies — hauling 40 to 50 ton loads at iron and coal mines — handling the toughest jobs of road building and maintenance — bucking snow drifts and clearing heavy snows from highways and airports. Wherever and whenever roads and weather are at their worst, you will find Walter Tractor Trucks hauling at their best. Write for detailed literature.

WALTER MOTOR TRUCK CO.
1001-19 Irving Ave., Ridgewood, Queens, L. I., N.Y.

HASKELITE PLYMETL

Side Panels
and Roof



Bodies that are saving war essentials like gasoline and rubber illustrate a point worth remembering in peace time. It is one of those simple points which are easy to overlook: *Every ounce of dead-weight saved can be sold over and over again as pay load.*

Haskelite Panels in body construction are stiff enough in themselves to eliminate certain reinforcing members. The end result is a *lighter* body that is *stronger*... and for the long pull a better money-maker.

HASKELITE PHEMALOID

Partitions, Tailgates and Floors

*Designed and built by
the John F. Ivory
Co., Detroit,
Furniture and
Industrial
Movers*

*The Body Construction
That Saves
Weight, Rubber and Gas*

HASKELITE MANUFACTURING CORPORATION
Grand Rapids, Michigan
CHICAGO • DETROIT • NEW YORK

HASKELITE

Plymetl

Phemaloid



SLUDGE is MORE of a PROBLEM NOW!



At war speeds, sludge deposits in your fleet motors are bound to increase. This means that poor lubrication, with all the troubles it brings, directly caused by sludge clogging, will increase maintenance costs and lay up vehicles at a time when the main job is to "keep 'em rolling".

MAGNUS METAFFIN

MODERN FLEET CLEANING METHODS

Metaffin and many other Magnus materials and methods are covered in detail in the "FLEET OPERATORS CLEANING HANDBOOK".

Write for YOUR copy now.

is a sure way to keep sludge under control. Used with the oil in the crankcase, it effectively prevents sludge formation. Used as a purge for motors where sludge has been allowed to accumulate, it will remove harmful sludge deposits.

With clean motors, Metaffin gives you insurance against break-downs and costs due to sludge. Since you can use it to clean any badly sludged motor, Metaffin offers you an all-around means of ending sludge troubles.

MAGNUS CHEMICAL COMPANY
36 SOUTH AVENUE GARWOOD, N. J.

SERVICE REPRESENTATIVES IN ALL PRINCIPAL CITIES

Magnus



FLEET CLEANING MATERIALS



**An Ounce of Prevention
THAT INSURES
TONS OF
SHIPPING SCHEDULES**

KEY Graphite Paste



A blown head or manifold gasket or a leaking oil or gasoline connection . . . any of these failures on a transport haul would pay for the cost of Key Graphite Paste for the entire fleet for years to come. Here's real insurance against road failure—coat all New or Old cylinder head, manifold, and crankcase gaskets—as well as differentials—and carburetor assemblies and gasoline lines with Key Graphite Paste.

Key Paste is the ideal sealing compound for all thread, gasket and flange connections where

high temperature and high pressures . . . oil and gasoline-proof service is required.

FREE SAMPLE . . . You can test Key Graphite Paste in actual service at no cost. Write for a liberal FREE sample of this compound — no obligation . . . use company letterhead.



2612 McCasland Avenue

East St. Louis, Ill.

FREE PUBLICATIONS

(CONTINUED FROM PAGE 44)

messages can be absorbed in a few seconds. The right and wrong way to use air equipment is graphically illustrated. The posters should help operator's mechanics realize that air is power and should not be wasted.

Operators should have a set of these posters in their shops to help in the campaign against the waste of power. Write L109 on the postcard for your free set.

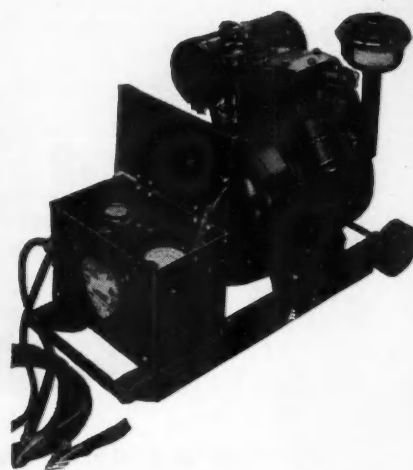
END

(Please resume your reading on P. 45)

NEW PRODUCTS

(CONTINUED FROM PAGE 45)

of the problems accompanying the use of storage batteries in operations where electric current and conventional equipment for charging are not conveniently available.



The equipment is designed to charge 6, 12 and 24 volt batteries at 10 to 300 amp., and consists of a specially designed generator driven by a 6 hp. single cylinder, air cooled gasoline engine.

For easy portability, the entire unit is mounted on a skid-type base, equipped with 5 in. wheels. When the unit is in use the wheels are raised off the ground, thus preventing creeping. The unit is used also, according to the manufacturer, as a direct current lighting plant with output range from 1000 to 3000 watts as required.

Because of the critical materials employed, this equipment is available only to those rating at least AA5 priority.

Use free postcard for more details

END

(Please resume your reading on P. 46)

Glass Retainers Now Standard For Military Storage Batteries

Automotive equipment of all military types now uses glass fiber retainer mats in storage batteries to extend their useful life under extreme service conditions, according to Major Hubert D. Keiser, of the Army Services of Supply.

PENNSYLVANIAS outlast TREAD after TREAD!



EMPIRE COAL YARDS
EMPIRE COAL — STOKER COAL
DOMESTIC COKE
181 South 27th Street Phone 2-4119
BIRMINGHAM, ALABAMA

March 27, 1943.

Lawrence City & Delivery Co.
2011 10th Street
Birmingham, Ala.

Your tires are on the hazardous jobs... 12 tons of coal carried 30 miles... 38,000 lbs. gross load over hot, rough roads. Ordinary tires do not come through good enough for recapping. WE ARE NOW RUNNING MANY RECAPPED PENNSYLVANIAS.

We have just received your letter of March 24th regarding the tires on our truck. We are sorry to hear that the tires on our truck are worn out. However, we have some of our tires running now that have been recapped and we are sure you have some in this trouble.

We have just received the Pennsylvania Turnpike tire and we are sure it is the best.

Yours very truly,
EMPIRE COAL COMPANY
H. P. Lacey

H. P. Lacey

Call on your Pennsylvania dealer for help with any tire problem. Or write direct to Pennsylvania Rubber Company, Dept. CCJ-6, Jeannette, Pennsylvania.

PENNSYLVANIA TIRES

MANUFACTURED BY THE
ORIGINATORS OF THE

Silent Vacuum Cup Tire



WGB

**Removes Grit and Water
Without Affecting Modern
Oils**

Many of today's best oils contain detergents to keep varnish from forming. Many of today's oil filters remove these additives. But not W.G.B. The big fibre cartridge in W.G.B. Clarifiers removes grit, water, and colloidal carbon, leaving the oil amber-clear with all its protective properties. Refills are cheaper than oil changes and are made quickly and without tools. Specify W.G.B. for a sturdy, simple proved clarifier which saves time, money, oil, overhauls, and irreplaceable engine parts.

Write today for this free book. See why W.G.B. Clarification pays. See correct models for gas and Diesel engines.



WGB
OIL CLARIFIER, INC.
KINGSTON, N. Y.

The Fleet Operator's Answer to WAR-TIME SHORTAGES



IN



MEN... MATERIALS... EQUIPMENT

Degrease Aluminum Parts Safely!

Today, conservation of your irreplaceable aluminum motor parts is a first line task that merits EXTRA care. That's why so many truck and bus fleet operators use FAST-WORKING, SAFE Oakite materials specially designed to degrease sensitive aluminum and alloy surfaces... and do it WITHOUT etching, pitting or darkening them.

You, too, will find that by simply applying solution of a recommended Oakite material you rapidly, THOROUGHLY remove dirt, grease and oil from aluminum pistons, cylinder heads, motor blocks and other parts... thus facilitate inspection and repair... obtain BETTER service and LONGER wear from this vital equipment. FREE, 36-page manual gives time-tested Oakite methods that will HELP YOU expedite ALL your other fleet maintenance work. Write for your copy TODAY!

OAKITE PRODUCTS, INC.

26D Thames Street, New York

Technical Service Representatives Located in All
Principal Cities of the United States and Canada

OAKITE

DEGREASING

speeds

FLEET MAINTENANCE

CCJ NEWSCAST

(CONTINUED FROM PAGE 76)

Williams Moves Stock Office

J. H. Williams & Co., manufacturer of drop-forged tools, announces the removal of its stock products sales offices from 225 Lafayette St., New York City, to the plant at Buffalo as of June 1. A local sales office will be maintained at the Lafayette Street address to serve the metropolitan area only.

Traffic Institute Meets June 21

Highway traffic problems brought on by the war, particularly the problem of train-

ing replacement drivers and transportation personnel, will keynote the program of the National Institute for Wartime Traffic Training, sponsored by national traffic and safety organizations, and scheduled for June 21 to July 2 at Ohio State University, Columbus. Headquarters for the Institute are at 321 Tower Bldg., Washington, D. C.

Messmer and Kalfon Appointments

L. M. Olson, general sales manager, R. M. Hollingshead Corp., Camden, N. J., has announced the appointment of C. J. Messmer as district representative on the company's line of automotive maintenance

(TURN TO PAGE 186, PLEASE)



Part of the 32 drivers of The Permanente Metals Corp., Permanente, Cal., fleet who were awarded safe driving medals by the National Safety Council. Seven drivers received two-year awards

What's happened to Plastic "Cavalon"*?

Du Pont's synthetic
resin coated upholstery
fabric is giving brilliant
service in the war



DU PONT INTRODUCED Plastic "Cavalon"—made with synthetic resins—when war shortages of both crude and synthetic rubber excluded manufacture of rubberized upholstery fabrics.

Yet synthetic resins also are vital to our war effort. And that is why Plastic "Cavalon" may be produced only for war- and essential commercial product-uses.

Plastic "Cavalon" now is serving on our far-flung battlefronts . . . the world's toughest of proving grounds. It meets and surpasses the requirements of Federal Specification E-KKL-136A, Type 3, Class A and B for upholstery. Yet, in spite of its outstanding war record, Plastic "Cavalon" is undergoing constant improvement. From it, for example, there has been developed a new quality of fire-resistant upholstery, meeting Army Air Corps Specification 12026A.

This steady wartime improvement of Plastic "Cavalon" means one important thing to you. When peace comes, this material will be even better qualified to serve you . . . in more ways than ever before . . . as an outstanding coated fabric upholstery for civilian use. E. I. du Pont de Nemours & Co. (Inc.), "Fabrikoid" Division, Empire State Building, New York, N. Y.

WAR USES for PLASTIC "CAVALON"

SHIPS • TANKS • SUBMARINES
COMBAT AUTOMOTIVE VEHICLES
AIRPLANES

*"Cavalon" is Du Pont's trade mark for its synthetic coated fabric.



"CAVALON"

BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

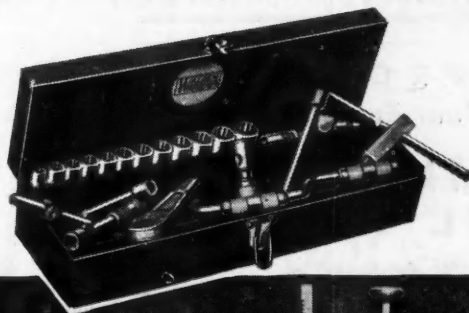


GOOD MEN + GOOD TOOLS

an unbeatable combination!

Make it possible for your men to speed production and facilitate your servicing. Demand the best—Walden Worcester dependable tools.

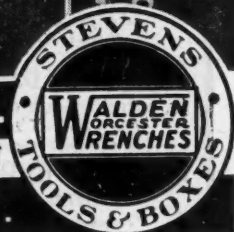
Produced by a plant with 36 years experience in building good tools. Send for catalog showing complete range of sockets, wrenches, tools.



STEVENS WALDEN, INC.

468 SHREWSBURY STREET

WORCESTER, MASS.



RBC

ROLLER BEARINGS

Help Build and Maintain



The Nation's Roads
ROLLER BEARING COMPANY
of AMERICA

28 Whitehead Road

Trenton, N. J.

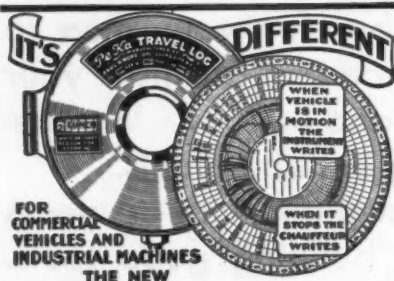
KINNEAR ROLLING DOORS FOR TRUCKS

Save space! Open upward!
Coil out of way. Always
safe from wind. Can't
joggle open! Less chance
of damage to doors. All
Metal. Fireproof! Prevent
thefts. Write for details.

The KINNEAR MFG. CO.

2100-20 FIELDS AVE., COLUMBUS, OHIO

FOR BUILDINGS — *the recognized leader*



"PeKa" TRAVEL LOG

Manufactured by
PAUL KNOPF 41-43 37th Street
LONG ISLAND CITY, N. Y.

**PROTECT
Your Engines With**

MICHIANA OIL FILTERS

Write for Bulletin 839

**MICHIANA
PRODUCTS
CORPORATION**

Michigan City, Ind.



INVESTIGATE THE

MERRILL

Electronic
WHEEL BALANCER
Balances Wheels on Any Vehicle

(So accurate it is used to
balance airplane propellers!)

MERRILL ENGINEERING

DENVER, COLORADO

"Tomorrow's Balancer Today"

CCJ NEWSCAST

(CONTINUED FROM PAGE 184)

products and lubricants, with headquarters in Camden, N. J. Leo Kalfon has been made New England district manager with temporary headquarters in East Greenbush, N. Y.

U. S. Rubber Expands Plan To Conserve Truck Tires

United States Rubber Company announced that its nation-wide U. S. Transportation Maintenance Program, successfully in operation for the past year, will be greatly expanded.

According to the U. S. Rubber plan, an inspector provided by the tire distributor will inspect each tire and tube on the trucker's fleet—either at the trucker's garage or the distributor's place of business. He will make a written report on the condition of all tires and tubes, and will certify to the need for new tires, tubes or recapping service when required. The inspector also will provide, upon request, a form to be used by the fleet operator to compile the necessary data for every truck as required on a monthly report to the ODT, a booklet "How to Save Truck Tires," truck tires inflation chart, heavy service tire manual, tire mileage record cards, U. S. truck conservation corps decals—all in the interest of "Keeping 'em Rolling."

Sherwin-Williams Promotes Three

Three promotions in the sales personnel of Sherwin-Williams Co. were announced by C. M. Lemperly, director of sales and distribution. E. W. Windsor has been made assistant to Mr. Lemperly. In addition to his new duties, he will continue as manager of Kem-Tone sales, automotive finish and graphic arts sales. C. F. Toll, made advertising manager a year ago this month, has been appointed general manager of publicity. L. W. Dasbach will head dealer and general advertising activities.

McQuay-Norris Gets Joint "E"

The Army-Navy "E" flag was awarded to two divisions of the McQuay-Norris Manufacturing Co. on May 5. For the first time in the St. Louis area, two ceremonies were held in a single day for one company. The flag was awarded by Brigadier General J. Kirk, Chief of the Small Arms Ammunition branch of the Office of the Chief of Ordnance and accepted, in the name of the company and its employees, by W. K. Norris, president of the company.

(TURN TO PAGE 188, PLEASE)

★ PAR ★

AIR COMPRESSORS

for full volume and
top pressure operations

See Your Par Jobber

LYNCH Manufacturing Corp.

DEFIANCE, OHIO, U.S.A.



SPECIALLY BUILT FOR FLEET OPERATION
See your Ramco Jobber or write Ramsay Accessories Mfg. Corp., 3710 Forest Park Boulevard, St. Louis, Missouri.

THE Decalcomania that is . . .

FIRST in

**APPEARANCE
ECONOMY
DURABILITY**

Permalux "KOLORFILM"

PERMALUX "KOLORFILM" decals offer greater durability and economy in application and maintenance. Completely synchronous with modern truck finish, they last longer . . . look better!

IT'S MADE OF DuPONT "DULUX"

Write TODAY for details.

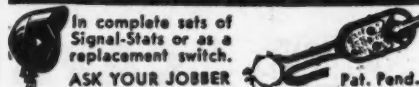
THE PERMALUX COMPANY

900-10 West Lake St.,

Chicago, Ill.

There's only One
BURN-OUT PROOF
DIRECTIONAL SIGNAL SWITCH

and we make it!



In complete sets of
Signal-Stats or as a
replacement switch.

ASK YOUR JOBBER

Pat. Pend.

SIGNAL-STAT CORPORATION

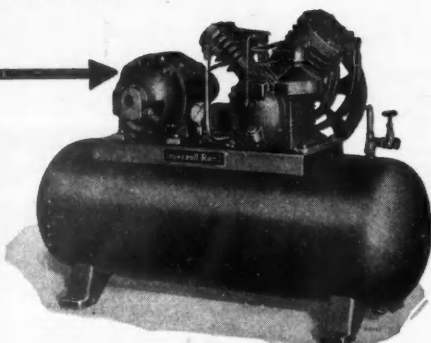
68 JAY STREET BROOKLYN, N. Y.

BABY YOUR COMPRESSOR MOTOR

A little attention will add years to the life of the motor on your compressor. We suggest the following:

- 1 Blow dirt off motor windings periodically. If very dirty, spray with carbon tetrachloride.
- 2 Direct-current and many single-phase motors have commutators. These should be wiped occasionally with non-linting cloth. Never oil the commutator.
- 3 Overheating may be caused by low voltage or a serious overload. Have an electrician find and cure the cause.
- 4 Motors should be lubricated regularly—about every 3 to 6 months if oil lubricated and about once a year if grease lubricated. Follow the motor manufacturers' instructions exactly.

BABY IT

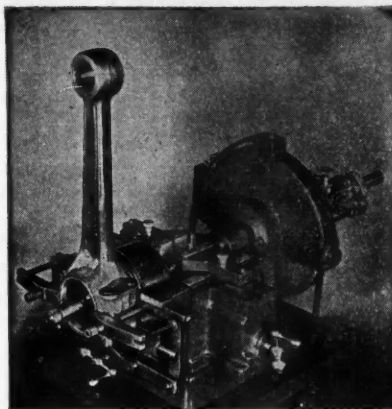


All Ingersoll-Rand plants have been awarded the Army-Navy "E" for war production.

3-265

Ingersoll-Rand
11 BROADWAY, NEW YORK, N. Y.

Compact—Fast—Accurate TOBIN—ARP Rod Boring Attachment



Bores semi-finished babbitted rods, inserts in the rod and the rod forging itself. Designed to fit our Shell Bearing Boring Machine. Convenient to use. Handles all rods up to and including R. D. 8 Caterpillar Diesel. For resizing V8 Ford rods quickly, it can't be beat.

Write for complete details on it, also ask for particulars on our Shell Bearing Boring Machine and Line Boring Machine.

TOBIN-ARP MFG. CO.

913 Washington Ave. S.

Minneapolis, Minn.

SPEED UP

MAINTENANCE and REPAIR

with the

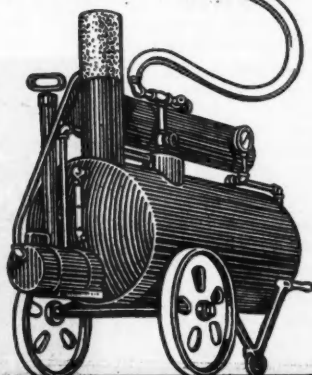
SIEBRING

STEAM
CLEANER

Ordinarily Difficult Cleaning Jobs Made Easy

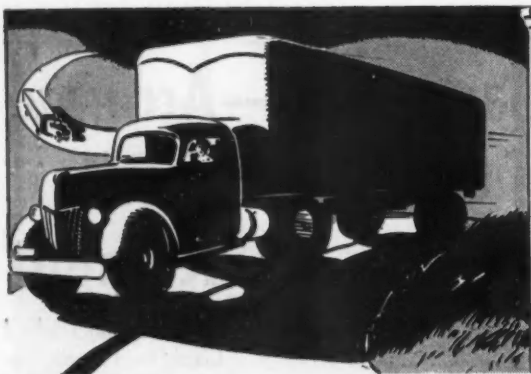
You'll be amazed at the efficient and convenient manner in which the SIEBRING STEAM CLEANER removes the hardest grease, grime, and dirt from trucks, motors, tanks, tractors, airplanes, and all heavy machinery.

This automatic appliance saves many hours time and precious labor—operates satisfactorily on either fuel oil, artificial or natural gas. **TEN DAYS FREE TRIAL OFFER** . . . write for literature and surprisingly low cost.



SIEBRING MANUFACTURING CO.—GEORGE, IOWA

K-D TOOLS
"The Hustlers for your Toolbox"
AT JOBBERS' EVERYWHERE



**Your Truck is Pledged to
VICTORY—Protect It!**

AMERICAN SAFETY TANK CO.
KANSAS CITY, MO.

KNOW ANY SLEEPING TOOLS?

The tremendous demand for new tools in the armed forces and war plants makes replacements hard to get. Therefore, good tools are doubly valuable. So if you have or know about any idle Williams wrenches—put 'em to work. See that they get into war-vital hands immediately.

WILLIAMS
DROPPED DROP-FORGED TOOLS

DROP-FORGED TOOLS & DROP-FORGINGS
J. H. Williams & Co., Buffalo, N. Y.

McCREARY TIRES

GIVE MORE MILES at LESS COST

Proven performance for 25 years. 20 per cent more mileage due to Bibb heat-resisting cord built into carcass and tread. Recaps deliver 80 per cent of original mileage.

Write for name of nearest distributor.

McCREARY TIRE & RUBBER CO.
INDIANA, PA.

VALLEY CHARGERS

HAVE
Gone To War



Remember Valley Chargers . . . when we can again supply you with these simple, efficient and economical battery-charging units.



VALLEY ELECTRIC CORP.
4221 Forest Park Blvd., St. Louis, Mo.

STANDARD & SPECIAL TRUCKS

ANY SIZE OR TYPE



AVAILABLE TRUCK COMPANY
2501 Elston Ave., Chicago, Illinois

ODT NEWS

(CONTINUED FROM PAGE 64)

(E.O. 8989, 9156; 6 F.R. 6725, 7 F.R. 3349)
Issued at Washington, D. C., this 24th day of May, 1943.

Signed (C. D. YOUNG)
Deputy Director of the
Office of Defense Transportation

APPENDIX No. 2

Commodities	Maximum Weekly Deliveries	
	Wholesale	Retail
(1) Fresh or frozen meat, poultry, eggs, fruits, vegetables, fish and shell fish, or live plants for food production	5	3
(2) Bread and perishable bakery products (excluding dry biscuits, crackers, pretzels, and similar bakery products in packages designed to retain their palatability for an extended period)	6	3
(3) Alcoholic beverages or wines not including malt beverages	1	0
(4) Non-alcoholic beverages (excluding fresh milk or cream, and drinking water when transported in containers exceeding one gallon in capacity), manufactured tobacco products, confectioneries, or a combination thereof	2	0
(5) Malt beverages:		
In bottles	1	0
In kegs	2	0
PROVIDED, That when a combination delivery of bottled and keg malt beverages is made from one truck, no more than 2 wholesale deliveries may be made during that week.		
(6) Fresh milk or cream, or other products when delivered in combination with fresh milk or cream: PROVIDED, That no two retail deliveries shall be made on the same or consecutive days	6	4
(7) Ice cream or ices (including ice cream mix and frozen desserts)	4	0
(8) Magazines and periodicals	4	0
(9) Laundry, or garments or fabrics the subject of dry cleaning, dyeing, or tailoring: PROVIDED, That one additional wholesale delivery of laundry may be made to hotels and restaurants, and one additional retail delivery of laundry may be made when the shipment consists exclusively of damp wash	5	2
(10) Ice	7	7
(11) Parts or supplies for repairs	6	6
(12) Cut flowers (except for funeral purposes)	5	0
(13) Ornamental shrubs, nursery stocks, toys, novelties, jewelry, furs, radios, phonographs or antiques	2	0
(14) Any commodity not listed above in this Appendix No. 2	2	2

END

(Please resume your reading on P. 66)

VITAL TO—

- Low Mileage Costs
- Easy Operation
- Maintained Schedules



SKF

BALL AND ROLLER BEARINGS



OVER 70% OF ALL
MAKES OF TRUCKS
AND BUSES ARE

Zollner EQUIPPED

ZOLLNER

HEAVY DUTY PISTONS

ZOLLNER MACHINE WORKS FORT WAYNE, IND.

Better—but not
more expensive!

**SHULER
AXLES**

SHULER AXLE CO.
LOUISVILLE, KY.

refilco

OIL FILTER
REPLACEMENT CARTRIDGE

QUALITY PROVEN
OIL FILTER CARTRIDGES

FOR ALL
POPULAR MAKES

REFILL FILTER CO.,
EAST ORANGE, NEW JERSEY

Adeco NOZZLE TESTER



FOR DIESEL ENGINES

STOP THAT SMOKE! Test your diesel nozzles quickly, accurately — with America's most widely used nozzle tester. This sturdy, lightweight, precision-built, low-cost, portable hand test pump can help you avoid costly delays and possible damage to injector tips.



● Write for illustrated bulletin.

AIRCRAFT AND DIESEL EQUIPMENT CORPORATION

4401 NORTH RAVENSWOOD AVENUE, CHICAGO, ILLINOIS

Manufacturers of Diesel Pumps, Injectors, Nozzles, Nozzle Holders, etc.



"AIRY" TEX

A PERFECT REPLACEMENT FOR EVERY AILING FUEL PUMP

Let us replace your ailing fuel pumps with AIRTEX perfect pumps of the same type, at a low exchange price. Every AIRTEX exchange fuel pump is equipped with the 50,000 mile guaranteed diaphragm.



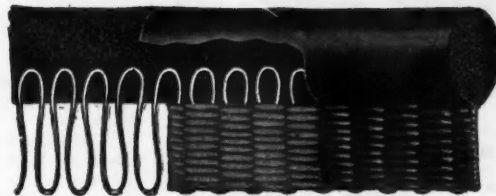
AIRTEX DIAPHRAGMS GUARANTEED 50,000 MILES

Your Profits Climb with the AIRTEX Line

AIRTEX AUTOMOTIVE CORP., FAIRFIELD, ILL.



PROTECTS INTERIORS



INNER-SEAL FOR HEAVY-DUTY VEHICLES

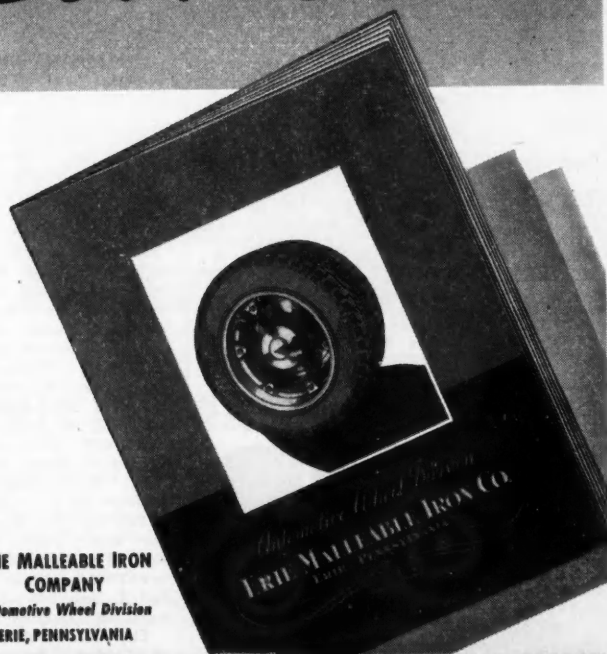
INNER-SEAL Waterproofed Weather Stripping at doors and windows protects interiors of heavy-duty vehicles. Keeps out rain, dust, dirt and drafts.

The only weather stripping with the spring-wire feature which holds INNER-SEAL firmly against any surface. Fits tight, stays tight, provides a perfect seal under all weather conditions.

Write for Complete Information
BRIDGEPORT FABRICS, INC.
BRIDGEPORT, CONN.

Established 1837

Send FOR THIS



ERIE MALLEABLE IRON COMPANY
Automotive Wheel Division
ERIE, PENNSYLVANIA

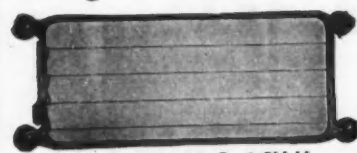
ERIE WHEELS

IN WAR SERVICE . . .

Fulton Electric Sleet-Frost Shields and rubber-bladed Defrosting Fans are on duty today on thousands of trucks and cars, in many lands . . . providing clear-vision driving safety regardless of weather. This, too, is an important war service.



No. 498
Rubber-Bladed
Defrosting &
Ventilating
Fan



Fulton Electric Sleet-Frost Shield

We made 'em before . . . and we'll make 'em again . . . when Victory is won.

THE FULTON COMPANY
1912 So. 82nd St., Milwaukee, Wis.

DOLE

*Replacement
Thermostats*

PRIMERS • FITTINGS

THE DOLE VALVE COMPANY

1901-1941 Carrol Ave., Chicago, Ill.

Representatives in Principal Cities

The
Ring
for
These
Times



**WAUSAU
OIL-SAVR Piston Rings**

The Free Running Ring with the
Safety Center Unit

See your jobber or write

WAUSAU MOTOR PARTS COMPANY
2400 Harrison Blvd., Wausau, Wis.

BALDOR

**ELECTRICAL SPECIALISTS
FOR 22 YEARS**

Manufacturers of
Electric Motors
Electric Motor Grinders
Battery Chargers
Fast Battery Chargers
Battery Testers

Write for Bulletins

BALDOR ELECTRIC COMPANY
4146 Duncan Ave. ST. LOUIS, MO.

ODT JOINT INFORMATION OFFICES

Location, address, management and service charges (in all available cases) of 74 offices approved by ODT as of May 20, 1943. This listing will be kept up to date in future issues.

AMARILLO, TEXAS—200 North Fillmore St. Manager: Mrs. Lucille D. Gilley. Service charges: Clearance statement, 25c; assignment of traffic—one to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

ATLANTA, GA.—510 Chamber of Commerce Bldg. Manager: R. S. Reese. Service charges: Charge for clearance or assignment of traffic or vehicles is based on number of trucks operated, as follows: 1 to 10 trucks—\$5 monthly; 10 to 20 trucks—\$7.50 monthly; 20 to 30 trucks—\$12.50 monthly; 30 to 50 trucks—\$15 monthly. Non-contributing or non-sustaining common carriers to pay for traffic diverted to them by or through the J. I. O. at 10c per 100 lbs.

BALTIMORE, MD.—Room 507, 22 Light St. Manager: Walter Kneip. Service charges: \$1.

BENTON HARBOR, MICH.—169 Michigan St. Manager: Robert C. Stahl. Service charges: Clearance statement, 50c; Assignment of traffic, partial or full load—up to 199 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

BINGHAMTON, N. Y.—19 Chenango St. Manager: Carl W. Clark. Service Charges: Clearance statement, \$1; Obtaining a load, \$2.

BIRMINGHAM, ALA.—Comer Bldg. Manager: Sid B. Jones. Service charges: Clearance statement, \$1. \$2 to carrier utilizing or furnishing equipment 1 to 100 miles; \$4 for 101 to 300 miles; \$6 over 300 miles.

BOSTON, MASS.—80 Federal St. Manager: Thomas R. Riston. Service charges: Clearance statement, 25c; Assignment of traffic, \$1.

BUFFALO, N. Y.—51 Earl Place. Manager: Mrs. Marcella Mahan. Service charges: \$1 each

CANTON, OHIO—433 Tuscarawas St. W. Manager: Jennie Pollock. Service charges: Clearance statement, \$1; Assignment of traffic, \$2.

CHARLOTTE, N. C.—1723 N. Tryon St. Manager: W. D. Wilkinson. Service charges: Clearance statement, \$1; Assignment of traffic, 5c per 100 lbs.; Minimum, \$1.

CHICAGO, ILL.—10 North Clark St. Earl Girard, chairman, Board of Governors. Service charges: Clearance statement, 25c. Assignment of traffic—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

CINCINNATI, OHIO—3129 Spring Grove Ave. Manager: C. T. O'Donnell. Service charges: Clearance statement, 50c. Assignment of traffic—full truck, \$1; less than full truck, 75c.

CLEVELAND, OHIO—1814 Standard Bldg. Manager: Edwin C. Reminger. Service charges: Clearance statement, \$1; Assignment of traffic, \$2.

COLUMBIA, S. C.—1316 Washington St. Manager: J. T. Outlaw. Service charges: No charge for clearance statement; assignment of equipment or traffic (partial or full load)—5c per 100 lbs. up to 4000 lbs.; 3c per 100 lbs. above 5000 lbs.; minimum charge, 50c; maximum, \$5.

COLUMBUS, OHIO—3660 A.I.U. Bldg. Manager: Harvey G. Wagner. Service charges: Clearance statement, 25c; lease of vehicle, \$1; traffic assignment, \$1.

DALLAS, TEXAS—301 North Market St. Manager: Edwin R. Joyce. Service charges: Clearance statement, 25c; Assignment of traffic—one to 100 miles, \$1; 101 to 200 miles, \$2; over 200 miles, \$3.

DENVER, COLO.—410 Denham Bldg. Manager: William A. Bosma. Service charges: Clearance statement, 10c; Assignment of traffic, 25c per ton with minimum charge of \$1.

DES MOINES, IOWA—400 S.W. Ninth St. Manager: John I. Petty. Service charges: Clearance statement, 25c; assignment of traffic, \$1.

DETROIT, MICH.—1627 W. Fort St. Manager: Carl S. Holecheck. Service charges: Clearance statement, 50c; Assignment of traffic, \$1.

EL PASO, TEXAS—Blumenthal Bldg. Manager, F. W. Grueling. Service charges: Clearance statement, 50c; for load or part load, up to 100 miles, \$1; for 101 to 300 miles, \$2; over 300 miles, \$3.

EVANSVILLE, IND.—410 Third & Main Bldg. Manager: Leslie Lacroix. Service charges: Clearance statement, 50c; Assignment of traffic, \$2.50.

(TURN TO PAGE 192, PLEASE)



The right braking material
for any commercial vehicle

**CUSTOM-BUILT SETS
CBB SETS
THERMO-BLOCKS**

Thermoid

THERMOID COMPANY · TRENTON, N. J.

JOBBER AND REPAIR MEN
STICK WITH WOHLERT THRU
THESE TRYING TIMES BE-
CAUSE THEY ARE DOING
EVERYTHING POSSIBLE TO
KEEP THEM SUPPLIED
WITH PARTS

Wohlert
CORPORATION

LANSING, MICHIGAN



**Here's How You
Can Reduce Your
Turn Signal Costs . . .**

Specify

TELEOPTIC

(one year guaranty)

Signals

THE TELEOPTIC CO.
Racine, Wis.

For Engine Bearings
Clutch Plates & Parts
King Bolt Sets

**Monmouth
is the name**

GET THE MOST OUT OF
DRIVE ACCESSORIES WITH
MORSE MORFLEX
COUPLINGS AND DRIVE SHAFTS

TODAY, more than ever—efficient, dependable, drive accessories are indispensable in maintaining operations. You can depend on Morse Morflex Couplings and Drive Shafts to reduce friction, wear and transmit power more efficiently. They cushion starting and driving shocks—no lubrication required. Write for helpful data.



MORSE
COUPLINGS AND DRIVE SHAFTS

MORSE CHAIN CO., Detroit, Mich., Ithaca, N. Y., Division of BORG-WARNER CORP.



**A FUEL
VITALIZER**

Have Your Fuel Problems Increased?

The requirements of our armed forces have lowered the quality of domestic gasoline and diesel fuels. Warco P.V.R. Compound (for addition to fuels only) has been developed to combat increasing troubles from this source. It will improve performance by:

1. Acting as a solvent for the sticky gums formed by partial oxidation of fuels and lubricants.
2. Eliminating incomplete atomization due to gummed up fuel pumps and carburetors.
3. Minimizing the accumulation of carbon, varnish and lacquer on valve seats and rings.
4. Maintaining a thin protective film in the top cylinder area to prevent metal to metal contact, and resist the corrosive action of the by products of combustion.

Engines run cooler • last longer • power increases • maintenance decreases • mileage is improved • when you use Warco P.V.R. Compound. Write for complete information today.



**THE WARREN REFINING
& CHEMICAL CO.**
CLEVELAND, OHIO



**WASHERS...
WHITEHEAD'S
LONG SERVICE RECORD
IS YOUR ASSURANCE
OF QUALITY**

★
Literature on Request



WHITEHEAD STAMPING CO.
1685 W. LAFAYETTE BLVD. • DETROIT, MICHIGAN

THE
ALMETAL
UNIVERSAL JOINT

We regret that it is impossible to give you our usual good service on ALMETAL Universal Joints. There are many reasons for this—restrictions on material and war conditions—older cars and trucks require more parts. We shall do our best to serve you now as in the past, and if there are delays, please understand that they are due to causes beyond our control.

THE ALMETAL UNIVERSAL JOINT CO.
1555 EAST 55th STREET • CLEVELAND, OHIO



ALLSIZE UNIVERSAL HOSE CLAMPS

A SINGLE LENGTH FITS WIDE RANGE OF HOSE DIAMETERS

Investigate the superior advantages of this popular, leak-proof, self-locking, completely universal hose clamp. One size actually eliminates more than 100 different sizes of preformed clamps . . . Reduces clamp inventory . . . Assures having right size clamp on hand when needed. Maximum take-up. Costs less, too! Easiest to use! Standard length, packed flat, services hose from 1/2" to 3" O.D. Featured by leading jobbers.

SEND FOR FULL DETAILS AND FREE SAMPLE

CENTRAL EQUIPMENT CO.
1018 SO. WABASH AVE., CHICAGO

BUELL AIR HORNS



Buell High Pressure Air Horns have a powerful, penetrating tone that gets attention and commands respect. Eliminate many time-wasting stops and starts. Save tires, brakes, clutches and gears. Cut gas and oil consumption.

AVAILABLE ON PRIORITY

BUELL AIR COMPRESSOR



Used on bomber and fighter planes to operate brakes and machine guns. Precision workmanship assures long, dependable service without frequent parts replacement.

BUELL MANUFACTURING CO.
2988 COTTAGE GROVE AVE., CHICAGO, ILL., U.S.A.

HEAVY DUTY MOTOR TRUCKS

AND

GASOLINE ELECTRIC GENERATING SETS

DUPLEX TRUCK COMPANY

Lansing, Michigan

SERVICE- PROVED

CRUELING years of toughest service prove Blackhawk Hydraulics superior in safety, rugged dependability and utility. "Service-Proved" Seal found only on Blackhawks. Only complete line of hydraulic hand jacks—models up to 50 tons capacity.

BLACKHAWK MFG. CO.
Dept. J1163 Milwaukee, Wis.

BLACKHAWK



ODT JOINT INFORMATION OFFICES

(CONTINUED FROM PAGE 190)

FARGO, N. D.—406 First Natl Bank Bldg. Manager: W. H. Clemens. Service charges: Clearance statement, 25c; Assignment of traffic—up to 100 miles, \$1; 101 to 200 miles, \$2; over 200 miles, \$3. In lieu of above charges, a carrier may elect to pay on a monthly basis of \$2 a month.

FLINT, MICH.—509 Harrison St. Manager: Miss Ann Marvosh. Service charges: Clearance statement, 50c; Assignment of traffic, \$1.

FORT WAYNE, IND.—826 Ewing St. Manager: Scott E. Weller. Service charges: Clearance statement, \$1; assignment of traffic (partial or full load), \$1; lease of equipment, \$1.

FORT WORTH, TEXAS—701 Pecan St. Service charges: Clearance statement 25c; Assignment of traffic—up to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

FRESNO, CALIF.—1837 Merced St. Manager: Harry R. Gayford. Service charges: Clearance statement, 25c; Assignment of traffic, partial or full load, \$1.

GRAND RAPIDS, MICH.—Morris Bldg.—Suite 6. Manager: Howard H. Harlow. Service charges: Clearance statement—from one to 10, \$1.50 each; 11 to 50, \$1 each; 51 and over, 50c each. Assignment of equipment or traffic, \$1.50.

GREELEY, COLO.—1st Ave. & 18 St., Reed's Corner at Produce Bldg. Manager: Miss Sera Anderson. Service charges: Clearance statement, 10c; Assignment of traffic—25c per ton with minimum charge of \$1.

HAGERSTOWN, MD.—113 W. Washington St. Manager: Miss Betty M. Winn. Service charges: Clearance statement, 25c. For carrier having freight to transport or for carrier transporting freight, \$1 (\$2 per contract).

HOUSTON, TEXAS—1006 Washington Ave. Manager: B. Frank Johnson. Service charges: Clearance statement, 25c; Traffic assignment up to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles \$3.

INDIANAPOLIS, IND.—611 K. of P. Bldg. Manager: Mrs. Catherine L. Goldsboro. Service charges: The minimum assistance or service charge is \$5. In addition, there is a charge for each clearance statement over and above four per month—25c. Assignment of traffic—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

KANSAS CITY, MO.—1200 Genessee. Manager: Paul M. Landsberg. Service charges: Clearance statement, 25c. Assignment of traffic, 25c. *Option: Annual basis, \$18.00 per year.

KNOXVILLE, TENN.—111 W. Quincy Ave. Manager: Ben H. Clark. Service charges: Assignment of traffic—up to 200 miles, \$2; over 200 miles \$3.

LANSING, MICH.—315 Hollister Bldg. Manager: H. C. Kuhnert. Service charges: For each service rendered—50c.

LOS ANGELES, CALIF.—122 E. 7th St. Manager: George G. Grant. Service charges: Clearance statement, 25c; Assignment of traffic, \$1.

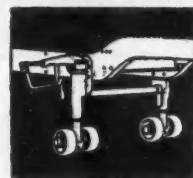
LOUISVILLE, KY.—701 Republic Bldg., 5th & Walnut Sts. Manager: Lew Ullrich. Service charges: Clearance statement, 25c. Assignment of traffic—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3. Assignment of empty equipment—1 to 150 miles, \$1; over 150 miles, \$2. (*AAA mileage shall govern.)

LUBBOCK, TEXAS—1801 Texas Ave. Manager: W. D. Benson, Jr. Service charges: Clearance statement, 25c; Assignment of traffic (partial or full load)—up to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

MANSFIELD, OHIO—3 N. Main St. Manager: James L. Eberly. Service charges: Clearance statement, 50c; Assignment of traffic, \$2.

(TURN TO PAGE 194, PLEASE)

AUSTIN THE ACCEPTED STANDARD . . .



A complete line of **LANDING GEARS** . . . HORIZONTAL, VERTICAL and FOLDING TYPES.

Write for complete information on "SAFETY PROPS" and FIFTH WHEELS.

AUSTIN

TRAILER EQUIPMENT COMPANY MUSKEGON MICHIGAN

*For a Smooth, Safe Ride
at Lower Cost, use*

CLE-AIR

Hydrau-Matic Shock Eliminators

★ ★

The Cleveland Pneumatic Tool Co.
Cleveland, Ohio

*The complete line
that completely satisfies*



Gasket craftsmen since 1906

The Fitzgerald Mfg. Company
Torrington, Conn.

AUTOPULSE ELECTRIC FUEL PUMP

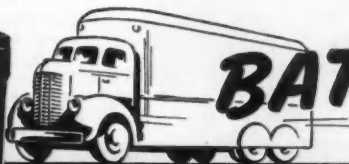
- Uninterrupted Schedules
- Instant Starting
- Greater Economy
- No Vapor Lock
- Added Protection



AUTOPULSE CORP., DETROIT

KATHANODE The Long Life

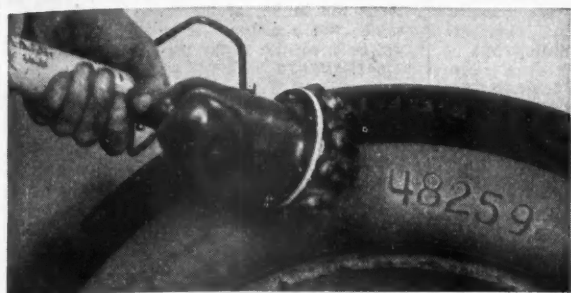
THE KATHANODE CORPORATION • CHICAGO, ILL.



BATTERY

To insure maximum wartime performance and economy, equip busses and trucks with Kathanode, the heavy-duty, original spun glass battery.

NOT EVERY BALD TIRE IS AN OLD TIRE!



Each tire on each of your trucks has an interesting life story. Do you know this story well enough to intelligently do your part in conserving rubber? Today when every ounce of rubber is needed so desperately why not let Everhot help you with these case histories?

With the EVERHOT Electric Branding Iron (ten digits 0 to 9) it is possible to put your own number on each tire or the serial number on both sides in larger figures where they can be plainly seen. This Branding Iron together with the EVERHOT TIRE RECORD SYSTEM (free to Everhot users) will give you at a glance the information you need.

Priced at only \$35.00 f.o.b. Maywood, Illinois.

Know why your tires are in their present condition. Send for literature and sample forms, today.

Everhot MFG. CO., Maywood, Ill.

GIVE YOUR TIRES A CHANCE

Stop pounding them to death.

USE

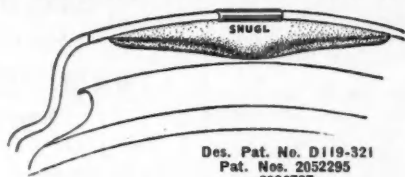
Snugl Fade-away **BALANCE WEIGHTS**
THE WEIGHTS THE GOVERNMENT USES

Balance each wheel and stop those hammer blows. Snugls are easy to install and cannot rattle or work loose because of the dovetail clip. Sizes 1/2 oz. to 1 1/2 lbs.

ASK YOUR JOBBER OR WRITE US DIRECT FOR FULL DETAILS.

Manufactured by

MID-WESTERN AUTO PARTS, 824 E. Elm St., Kokomo, Ind.
Western Distributor: Kenneth V. Mills, 910 W. Pico Blvd., Los Angeles, Cal.



Des. Pat. No. D119-321
Pat. Nos. 2052295
2036757

MAREMONT

DEPENDABLE SINCE 1877



for
*Safety's
Sake*

DO-RAY
SAFETY LIGHTING
and
EQUIPMENT



DO-RAY
LAMP COMPANY
1458 S. MICHIGAN AVE. • CHICAGO

COMMERCIAL CAR JOURNAL

Is the Leading Publication
in the TRUCK FLEET Field

Sterling

Your Sterlings are vital weapons
THEY DELIVER WHERE AND WHEN NEEDED

"Keep Them Fit"

Sterling Service organizations are trained and equipped to aid you in rendering dependable service, so essential in the war effort. Take advantage of their facilities now.

STERLING MOTORS CORPORATION
MILWAUKEE, WISCONSIN

KING

Our Plant is working to capacity on "KING" Testing Equipment for the Government, and we regret that we cannot give our customary good service. However, we can ship most orders with the required priority rating.

THE ELECTRIC HEAT CONTROL CO.
9121 INMAN AVENUE • CLEVELAND, OHIO



Call on Heil's
nation-wide distributor organiza-
tion for specialized service on
dump bodies and tanks. BH-65



STOPS FIRES FAST!

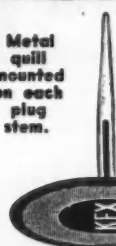
duGas FIRE
EXTINGUISHING UNIT
for protection of automotive
equipment against fire.

Underwriters' Approved
Complies with non-critical,
war emergency specifications.
DUGAS ENGINEERING
CORPORATION
MARINETTE WISCONSIN
Owned and operated by
Ansol Chemical Corporation.



KEX TIRE PLUGS

Dynamic Hole Stoppers For
Punctured Casings. A few
CENTS spent now will save
DOLLARS and TIRES. More
miles per tire is patriotic
economy. KEX are more miles
convenient to carry for instant
use. 3 sizes meet all needs.
Automotive Stores and Whole-
salers Sell KEX.



The
Wedler-Shuford Co.,
St. Louis, Mo.



GLOBE
SPINNING POWER
TRADE MARK REG.
BATTERIES

built for REPLACEMENT SERVICE
GLOBE-UNION INC., MILWAUKEE, WIS.

HOOF GOVERNORS

Key — Seal — Dash Control Types



FULL ENGINE POWER and ACCELERATION
COMPACT • NEW FEATURES • TAMPER PROOF

HOOF PRODUCTS COMPANY
4543 S. Laramie Ave., CHICAGO, ILL.

ODT JOINT INFORMATION OFFICES

(CONTINUED FROM PAGE 192)

MASON CITY, IOWA—317 Ninth Street, S. E. Manager: F. G. Cookman. Service charges: Clearance statement, 25c; Full or partial load, 75c.

MEMPHIS, TENN.—870 Linden Ave. Manager: Charles C. Thomas. Service charges: Each clearance statement issued in excess of four per calendar month—50c each. Assignment of equipment or traffic—100 miles or less, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

MILWAUKEE, WIS.—1139 W. Canal St. Manager: Earle D. Healy. Service charges: 25c for each service rendered; \$5 for each Service Coupon Book (20 coupons).

MOLINE, ILL.—301 Ninth St. Manager: Thomas H. Smith. Service charges: Clearance statement, 25c. A carrier furnishing equipment for the movement of traffic from one to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3 (AAA mileage shall govern). In lieu of the above charges, carriers may elect to pay a flat rate per month (payable in advance) which is \$5 for common carriers, \$3 for contract carriers and \$2 for private carriers.

MUSKOGEE, OKLA.—207 Municipal Bldg. Manager: Ted Schwachhofer. Service charges: Clearance statement, 50c. Office will receive 5% of total transportation charges assessed.

NASHVILLE, TENN.—619 4th Ave. S. Manager: Mrs. Loretta B. Hickey. Service charges: Clearance statement, 25c; Assignment of traffic, 5c per 100 lbs. with a minimum of \$1 and a maximum of \$7.50 to be paid by carrier receiving freight. Two dollars to be paid by the lessor of a motor truck.

NEW ORLEANS, LA.—1461 Magazine St. Manager: Robert Matthews. Service charges: Clearance statement, 25c; Assignment of traffic or vehicle—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3. (AAA mileage to govern.)

NEW YORK, N. Y.—90 West St. Manager: Harold Connor. Service charges: For each service rendered, \$1.

OKLAHOMA CITY, OKLA.—Public Market Bldg., 311 S. Klein St. Manager: Fred M. Cline. Service charges: Clearance statement, 25c; 50c by receiving carrier for less than truck-load traffic; \$1 for all truck loads obtained up to 100 to 101 miles; \$2 for all truck loads obtained up to 101 to 300 miles; \$3 for all truck loads obtained over 300 miles. A deposit of from \$5 to \$10 will be requested from each participating carrier which will be credited to its account as it uses the services of the office.

OMAHA, NEB.—2615 N Street. Manager: H. F. Lindberg. Service charges: Clearance statement, 25c; maximum charge of \$2 per month per operator.

ORANGE, CAL.—302 W. Maple St. Manager: J. D. Spennetta. Service charges: Clearance statement, 25c; where tonnage is obtained the charge will be 5% of the gross revenue, minimum, \$1.

PEORIA, ILL.—908 S. Washington St. Manager: Raymond C. Rafferty. Service charges: Assignment of traffic—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

PHOENIX, ARIZ.—45 W. Lewis Ave. Manager: Robert F. Goff. Service charges: Clearance statement, 25c; assignment of freight, based on length of trip—1 to 100 miles, \$1; 101 to 300, \$2; over 300, \$3.

PITTSBURGH, PA.—Fort Pitt Hotel. Manager: Robert E. Cox. Service charges: Clearance statement, 35c; Assignment of traffic (full or partial load)—up to 300 miles, \$1; over 300 miles, \$2.

PORT HURON, MICH.—1231 Twelfth Ave. Manager: Ralph Miller. Service charges: Flat charge of \$1 each for each service. Where credit is established, the following is in effect: From 1 to 3 services, \$1 each; Four services, 75c each; All services over four, 60c each.

PROVIDENCE, R. I.—Room 503, 85 Westminster St. Manager: Francis E. Nute. Service charges: Clearance statement—empty vehicle 25c; Traffic assignment, \$1.

PUEBLO, COLO.—211 W. 5th Street. Manager: Esther M. Santmyer. Service charges: Clearance statement, 10c; Assignment of traffic, 25c per ton with a minimum charge of \$1.

ROCHESTER, N. Y.—15 Circle St.
ROCKFORD, ILL.—121 Loomis St. Manager: Theodore H. Nelles. Service charges: Clearance statement, 25c; Assignment of traffic or vehicle—1 to 100 miles, \$1; 101 to 300, \$2; over 300, \$3.

ST. LOUIS, MO.—Room 228, Claridge Hotel. Manager: Bernard Feuerstein. Service charges: Clearance statement, 25c; Each registration of traffic to any one destination, 25c; Minimum initial deposit, \$2.50.

ST. PAUL, MINN.—1957 University Ave. Manager: Lou Hoskins. Service charges: 10c registra-

tion fee for each vehicle. No additional charge for clearance statement. When a carrier receives a load of freight through the Joint Information Office, the charge will be 5% of the revenue accruing to such carrier, with a minimum fee of 25c. This latter fee will be in addition to the 10c registration fee.

SACRAMENTO, CALIF.—4850 Stockton Blvd. Manager: T. M. Fitzgerald. Service charges: Clearance statement, 25c Assignment of traffic, partial or full load, \$1.

SAN ANTONIO, TEXAS—603 N. St. Mary's St. Manager: D. R. Thomas. Service charges: Clearance statement, 50c; Assignment of traffic—1 to 100 miles, \$1; 101 to 300, \$2; over 300, \$3.

SAN DIEGO, CALIF.—863 Seventh Ave. Manager: Mrs. Lucille H. Gunniff. Service charges: Clearance statement, 25c; Loading of freight, \$1.

FRAM

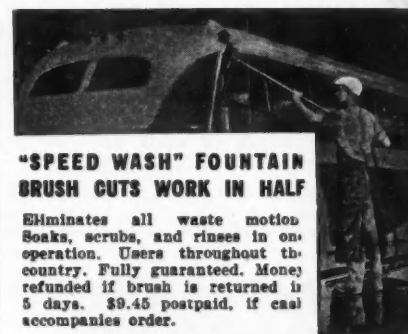
OIL AND MOTOR CLEANER

Cleans Oil Chemically.

Physically, Visibly

FRAM CORPORATION

Providence, R. I.



"SPEED WASH" FOUNTAIN BRUSH CUTS WORK IN HALF

Eliminates all waste motion.
Boaks, scrubs, and rinses in one
operation. Users throughout the
country. Fully guaranteed. Money
refunded if brush is returned in
5 days. \$9.45 postpaid, if cash
accompanies order.

MILWAUKEE DUSTLESS BRUSH CO.
526 N. 22nd St. Milwaukee, Wis.

WAR EFFORT

Now Taking Our
Full Capacity

GRICO
2-AXLE DRIVE

19842 W. Eight Mile Rd.
Detroit, Michigan

JONES PORTABLE TACHOMETER



The world's largest
operators of commercial
vehicles use Jones Port-
able Tachometers to
check engine speeds for
tune-ups, and setting
governors, etc. Here are
a few: Standard Oil Co.,
of La., N. J., N. Y., Shell
Petroleum Co., Atlantic
Refining Company, Tide-
water Oil Company,
Keeshin Motor Express.

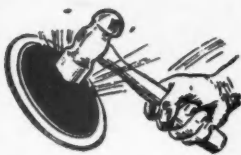
Maak Trucks, Brookway, U. S. Navy.

Direct, instantaneous reading

JONES-MOTROLA-STAMFORD, CONN.
432 FAIRFIELD AVENUE

BOWMAN Shatter-proof PLASTIC LENSES

Can take the hard knocks, because they are flexible. They have glass-like transparency and efficiency and are color fast, weather - proof and economical. Made in two colors, red and amber, that will not fade.



Ask your jobber or order direct.

BOWMAN AUTOMOTIVE PLASTICS CO.
4316 W. 192nd Street, Cleveland, Ohio

HOLLAND CAN "TAKE IT"

The smartest, most improved unit of its type, Model V-400 Vertical Lift Landing Gear is especially adapted for heavy duty service.

Powerful—rugged—dependable.

Complete truck and trailer equipment. Catalog on request.

HOLLAND HITCH CO.
HOLLAND, MICHIGAN

FRINK SNO-PLOWS

Both "V" TYPE and
ONE WAY BLADE TYPE
hand or power hydraulic control

FOR ALL MOTOR TRUCKS
FROM 1½ to 10 TONS

Write for catalog 38AC and 38BC with discount to truck driver.
CARL H. FRINK, Mfr., CLAYTON, 1000 1st, N. Y.
DAVENPORT-BESLER CORP., DAVENPORT, IOWA
FRINK SNO-PLOWS OF CAN. Ltd., TORONTO, ONT.

Dart Trucks

HEAVY DUTY FOR
OFF THE HIGHWAY SERVICE

—Specially Designed for—
Coal Mining—Iron Ore Mining—Copper
Mining—Flt and Quarry—Logging—Oil
Fields—Etc.
It Costs No More for Trucks Specially
Built to Fit Your Needs. Have Our Engi-
neers Visit and Analyze Your Operation.

DART TRUCK COMPANY
KANSAS CITY, MO.



CAMPBELL LUG-REINFORCED TIRE CHAINS

GREATER MILEAGE - GREATER SAFETY
INTERNATIONAL CHAIN AND MFG. CO.
YORK, PA.

SAN FRANCISCO, CALIF.—57 Post St. Manager: Frank K. Clifford. Service charges: Clearance statement, 25c; \$1 for load or partial load.

SIOUX CITY, IOWA—119 Livestock Exchange Bldg. Manager: John Shannahan. Service charges: Clearance statement, 5c; 10c for each partial or full load.

SOUTH BEND, IND.—802 S. Lafayette St. Manager: James E. Gilroy. Service charges: Assignment of traffic or vehicle—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3. Clearance statement, 25c. (AAA mileage to govern.)

SPOKANE, WASH.—512 Columbia Bldg. Manager: R. P. Corolus. Service charges: Clearance statement, 25c; Assignment of traffic—up to 100 miles, \$1; 100 to 200 miles, \$2; over 200 miles, \$3.

SPRINGFIELD, OHIO—Chamber of Commerce Bldg. Manager: Guy L. Cory. Service charges: Clearance statement, 50c; Assignment of vehicle or traffic, \$1.

STOCKTON, CALIF.—1327 S. Wilson Way. Manager: Oren A. Howard. Service charges: Clearance statement, 25c; Assignment of traffic, partial or full load, \$1.

SYRACUSE, N. Y.—351 South Warren St. Manager: Joseph C. Fields. Service charges: Clearance statement, 50c; Partial load, \$1 per vehicle; Full load, \$2 per vehicle.

TERRE HAUTE, IND.—1512 Lafayette Ave. Manager: George Batchelor. Service charges: For full or partial load to be transported from 1 to 100 miles, \$1; 101 to 200 miles, \$1.50; more than 200 miles, \$1.75.

WAUSAU, WIS.—105 Prospect St. Manager: Franklin H. Seefeldt. Service charges. 25c each.

WHEELING, W. VA.—34 14th St. Manager: Richard E. Fuqua. Service charges: Clearance statement, 25c; Assignment of traffic—1 to 100 miles, \$1; 101 to 300 miles, \$2; over 300 miles, \$3.

YORK, PA.—1339 E. Philadelphia St. Manager: George W. Forrest. Service charges: Clearance statement, 35c; reporting one or more loads to be moved, 25c; receiving load, \$1; receiving from half to full load, 50c.

YOUNGSTOWN, OHIO—220 Hubbard Road. Manager: Merle H. Fullerton. Service charges: Clearance statement, 50c; Lessee of vehicle pays \$1 for use of vehicle up to 100 miles; \$2 for 101 to 300 miles; and \$3 over 300 miles.

ODT Exempts Fleet Operators from CWN Tire Record Requirement

Effective May 17, 1943, the Office of Defense Transportation exempted fleet operators of commercial motor vehicles from the provisions of General Order ODT No. 21 which require that tire records be kept on the back of the operator's Certificate of War Necessity. However, fleet operators must maintain the required records elsewhere.

Winchester and Huff Serve ODT

The ODT has named John F. Winchester and Leo Huff, petroleum transportation engineers, as consultants to the Petroleum Carriers Section of its Division of Motor Transport. They are serving part-time as advisers on local delivery. Winchester, manager of the automotive department of the Standard Oil Co. of New Jersey, is in ODT's Washington, D. C., office. Huff, chief transportation engineer for the Pure Oil Co., will remain in Chicago.

DAYTON Spoke Type Steel WHEELS AIR-COOL BRAKE DRUMS AND TIRES

FOR TRUCKS, TRAILERS AND BUSES.
THE DAYTON STEEL FOUNDRY CO.
DAYTON, OHIO



FAST BATTERY CHARGING?

Sure. Write today for complete information on our Model 555 Fast Battery Charger. It's Tops In The Field.

BUY WAR BONDS

Joseph Weidenhoff, Inc.

4340-58 W. Roosevelt Road
CHICAGO, ILL., U. S. A.

DANDUX CANVAS PRODUCTS

Dandux Canvas Products meet Army and Navy specifications — they will meet yours. "Everything of canvas," for every industry—for a quarter century. Write for folder

C.R. DANIELS

44 WEST ST. • NEW YORK, N. Y.
Offices in Principal Cities

Specify Velvetouch BIMETALLIC FRICTION MATERIAL

for
CLUTCHES AND BRAKES
THE S. K. WELLMAN CO.
CLEVELAND, OHIO

Oldforge QUALITY TOOLS

Today tools have to stand the terrific driving punishment of industry at war. To many of the country's largest industrial concerns, now engaged in the war effort, the name OLDFORGE means tools of the highest possible quality. Tools that the skilled mechanic is proud to own and happy to use—QUALITY TOOLS.

QUALITY TOOLS are designed for use in Fleet Shops, automotive and aircraft manufacturing plants and in the Maintenance Shops of our armed forces.

Send for catalog TODAY

QUALITY TOOLS CORP. New Wilmington, Pa.

Advertisers' Index

This Advertisers' Index is published as a convenience, and not as part of the advertising contract. Every care will be taken to index correctly. No allowance will be made for errors or failure to insert

0

AC Spark Plug Div. Gen. Motors Corp.	89	Erie Malleable Iron Co.	189	Owens-Corning Fiberglas Cor.	97
Accessories Corp.	123	Ethyl Corporation	23	P & D Manufacturing Co., Inc.	120
Ahlberg Bearing Co.	90	Everhot Mfg. Co.	193	Parish Pressed Steel Co., subsidiary of Spicer Mfg. Corp.	70-119
Aircraft & Diesel Equipment Corp.	189	Federal-Mogul Corp.	81	Pedrick Piston Rings	14
Airtex Automotive Corp.	189	Federal Motor Truck Co.	77	Pennsylvania Rubber Co.	183
Albertson & Co., Inc.	99	Felt Products Mfg. Co.	98	Perfect Circle, The	7
Alemite	31	Ferodo & Asbestos, Inc.	100	Permalux Co., The	186
Almetal Universal Joint Co., The.	191	Fisk Tires Div. of U. S. Rubber Co.	171	Permatex Co., Inc.	3
Aluminum Company of America		Fitzgerald Mfg. Co., The.	192	Porter, Inc., H. K.	115
3rd Cover		Four Wheel Drive Auto Co.,		Purolator Products, Inc.	114
Aluminum Industries, Inc.	167	Back Cover		Quaker State Oil Refining Corp.	162
American Automatic Devices Co.	150	Fram Corp.	194	Quality Tools Corp.	195
American Bosch Corp.	22	Frink, Carl H., Inc.	195	Ramsey Accessories Mfg. Corp.	186
American Brakeblok Div. of The American Brake Shoe Co.	87	Fuller Mfg. Co.	145	Refill Filter Co.	188
American Chain & Cable Co., Inc. (Automotive and Aircraft Division)	24	Fulton Co., The.	190	Reo Motors, Inc.	Front Cover
American Hammered Piston Ring Div. Koppers Co.	158	Gallion Allsteel Body Co., The.	125	Rich Valves	2
American Safety Tank Co.	188	Gar Wood Industries, Inc.	30	Roller Bearing Co. of Amer.	186
American Steel Foundries.	86	Gatke Corp.	106	SKF Industries, Inc.	188
Anthony Co., Inc.	88	General Tire & Rubber Co.	20-21	Salisbury Axle Co.	119
Arkansas Fuel Oil Co.	155	Globe-Union, Inc.	194	Sealed Power Corp.	79
Associated Tire Lines.	29	Goodrich Co., The, B. F.	198	Seiberling Rubber Co.	117
Austin Trailer Equipment Co.	192	Grico Two Axle Drive Co.	194	Service Recorder Co., The.	122
Autocar Co.	69	Grizzly Mfg. Co.	110	Shaler Co., The.	33
Auto-Lite Battery Corp.	6	Guide Lamp Div., General Motors Corp.	91	Shell Oil Company	103
Autopulse Corp.	192	Hall Mfg. Co., The.	165	Shuler Axle Co., Inc.	188
Available Truck Co.	188	Hansen Mfg. Co., A. L.	101	Siebring Mfg. Co.	187
Baldor Electric Co.	190	Haskelite Mfg. Corp.	181	Signal-Stat Corp.	186
Bear Mfg. Co.	104	Hastings Mfg. Co.	83	Sinclair Refining Co., (Inc.)	176
Belden Mfg. Co.	172	Heil Co., The.	194	Snap-On Tools Corp.	190
Bendix Aviation Corp., Bendix Products Div.	63	Hein-Werner Motors Parts Corp.	177	Socony-Vacuum Oil Co., Inc.	16-17
Bendix-Westinghouse Automotive Air Brake Co.	152	Hercules Steel Products Co.	102	Sonneborn Sons, L. Inc.	151
Bishman Manufacturing Co.	136	Holland Hitch Co.	195	Spicer Mfg. Corp.	119
Blackhawk Mfg. Co.	192	Hollingshead Corp., R. M.	137	Standard Motor Products, Inc.	142
Blood Brothers Machine Co.	80	Homestead Valve Mfg. Co.	138	Standard Oil Co., (Indiana)	13
Bowman Automotive Plastics Co.	195	Hood Tires	29	Standard Oil Co. of California	131
Bridgeport Fabrics, Inc.	189	Hoof Products Co.	194	Sterling Motors Corp.	193
Brown-Lipe Gear Co.	119	Hygrade Products Co., Inc.	112	Stevens Walden, Inc.	185
Buell Mfg. Co.	192	Imperial Brass Mfg. Co., The.	140	Stewart-Warner Corp.	161
Carter Carburetor Corp.	133	Ingersoll-Rand	187	Studebaker Corp.	149
Casite Corp., The.	84	International Chain and Mfg. Co.	195	Teleoptic Co., The.	190
Central Equipment Co.	191	International Harvester Co.	36	Testing Apparatus, Inc.	126
Champ-Items, Inc.	116	Johns-Manville Corp.	159	Texas Co., The.	4-5
Champion Spark Plug Co.	11	Jones-Motrola Sales Co.	194	Thermoid Co.	190
Chevrolet Motor Div. General Motors Corp.	—	K-D Lamp Co., The.	135	Timken-Detroit Axle Co., The.	121
Chicago Rivet & Machine Co.	74	K-D Mfg. Co.	187	Timken Roller Bearing Co.	105
Cities Service Oil Co.	155	Kathanode Corp., The.	192	Titeflex Metal Hose Co.	168
Clawson & Bals, Inc.	12	Key Co.	182	Tobin-Arp Mfg. Co.	187
Cleveland Pneumatic Tool Co. The Continental Motors Corp.	192	King-Seeley Corp.	82	Toledo Steel Products Co., The.	197
Cooper Corporation, The.	78	Kingham Trailer Co., Inc.	108	Trailer Co. of America, The.	166
Cummins Engine Co.	1	Kinnear Mfg. Co., The.	186	Truck Equipment Co., Inc.	146
Curtis Pneumatic Machinery Div. of Curtis Mfg. Co.	134	Knopf, Paul	186	Trucktor Corp., The.	173
Daniels, Inc., C. R.	195	Koppers Co., American Hammered Piston Ring Div.	158	Tyson Bearing Corp.	153
Dart Truck Co.	195	Libbey-Owens-Ford Glass Co.	164	United States Asbestor Div. of Raybestos-Manhattan, Inc.	18
Dayton Rubber Mfg. Co., The.	107-127	Lincoln Engineering Co.	10	United States Rubber Co.	92-93
Dayton Steel Foundry Co.	195	Lindsay and Lindsay	67	Valley Electric Corp.	188
Delco Brake-Moraine Products Div. General Motors Corp.	143	Lipe-Rollway Corp.	174	Valvoline Oil Co.	169
Delco-Remy Div., General Motors Corp.	179	Lisle Corp.	85	Van der Horst Corp. of America.	109
De Luxe Products Corp.	147	Lynch Manufacturing Corp.	186	Victor Mfg. & Gasket Co.	8
DeVilbiss Co., The.	156	McCreary Tire & Rubber Co.	188	W G B Oil Clarifier, Inc.	184
Diamond T Motor Car Co.	27-28	McQuay-Norris Manufacturing Co.	2	Wagner Electric Corp.	25-175
Dill Manufacturing Co.	94	Mack Trucks, Inc.	73	Walker Mfg. Co. of Wis.	148
Dodge Div. of Chrysler Corp. 2d Cover		Magnus Chemical Co.	182	Walter Motor Truck Co.	180
Dole Valve Co., The.	190	Maremont Auto Products Inc.	193	Ward La France Truck Div., Great American Ind., Inc.	129
Do-Ray Lamp Co.	193	Marmon-Herrington Co., Inc.	24	Warner Electric Brake Mfg. Co.	113
Dugas Engineering Corp.	194	Marquette Mfg. Co., Inc.	128	Warren Refining & Chemical Co., The.	191
Duplex Truck Co.	192	Meehanite Research Institute.	139	Waukesha Motor Co.	32
du Pont de Nemours & Co. (Inc.) E. I.	163-185	Merrill Engineering	186	Wausau Motor Parts Co.	190
Eberhard Mfg. Co., Div. of the Eastern Malleable Iron Co.	130	Meyerco Corp., The.	35	Weatherhead Co., The.	124
Edison-Splitdorf Corp.	132	Michiana Products Co.	186	Wedler-Shuford Co., The.	194
Edwards Iron Works, Inc.	56	Midland Steel Products Co.	75	Weidenhoff, Joseph, Inc.	195
Electric Auto-Life Co.	15	Mid-Western Auto Parts	193	Wellman Co., The S. K.	195
Electric Heat Control Co., The.	193	Milwaukee Dustless Brush Co.	194	White Motor Co., The.	9
Electric Storage Battery Co., The.	65	Monmouth Products Co.	190	Whitehead Stamping Co.	191
		Monroe Auto Equipment Co.	154	Wilkening Mfg. Co.	14
		Morse Chain Co.	191	Willard Storage Battery Co.	26
		National Automotive Parts Association	95	Williams & Co., J. H.	188
		National Carbon Co., Inc.	157	Wittek Mfg. Co.	72
		National Refining Co., The.	111	Wohler Corp.	190
		Niehoff, C. E., & Co.	118	Wolf's Head Oil Refining Co.	141
		Oakite Products, Inc.	184	World Bestos Corp.	144
		Ohio Piston Co., The.	178	York Hoover Body Corp.	170
		Oshkosh 4-Wheel Drive Sales Agency	19	Zollner Machine Works	188